A LITERATURE REVIEW OF BIRD USE OF FARMLAND HABITATS IN THE GREAT LAKES - ST. LAWRENCE REGION

UNE ÉTUDE BIBLIOGRAPHIQUE DE L'UTILISATION, PAR LES OISEAUX, DES HABITATS AGRICOLES DANS LA RÉGION DES GRANDS LACS ET DU SAINT-LAURENT

Kathryn Freemark
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ABSTRACT

The Canadian Wildlife Service of Environment Canada is currently responsible for advising on risks to wildlife and their habitats associated with the new or continuing use of pesticides in Canada. To facilitate the development of exposure scenarios for risk assessment and the design of field studies, databases and supporting documentation were developed on the extent and bird use of farmland habitat in the Mixed-Wood Plain (MWP) ecozone in the Great Lakes-St. Lawrence region. Data were abstracted as given from scientific publications, graduate theses and government reports since 1950 for studies conducted in Canada and the U.S.A. with agricultural practices similar to those in the MWP. Bird use data (37% from Canadian study locations) was tabulated for 56 farmland habitats (including 35 crops) by species, month, activity (e.g. feeding, nesting), and intensity of use. A total of 168 bird species, representing a wide range of foraging guilds, were reported to use farmland habitats characteristic of the MWP. Forty-nine species accounted for 76% of all the bird use data abstracted. About 60% of all habitats included bird use data from studies conducted in Canada. The total number of bird species reported to use crop and noncrop habitats of note was corn (68), hay (44), soybean (44), red clover (36), wheat (30), oats (30), grapes (29), alfalfa (28), blueberry (26), sweet clover (19), cherry (19), pastures (41), old fields (30), and woodlots (107). The utility of the bird use data is limited by low quantity and quality for many habitats, and by variability in species use among locations and at any given time. Additional studies are needed on the spatial configuration of farmland habitats in the MWP and bird use of those habitats, particularly vegetable and fruit crops, and noncrop habitats adjacent to fields. Research efforts should also be directed towards use of no-till cropland because of the large quantities of pesticides routinely used in conservation tillage fields. Importance of landscape patterns on bird use of croplands should also be investigated. Study of bird use of farmland habitats not exposed to

RÉSUMÉ

Le Service canadien de la faune d'Environnement Canada est chargé de la prestation de conseils sur les risques que pose l'emploi, continu ou pour la première fois, de pesticides au Canada pour la faune et son habitat. Afin de faciliter l'élaboration de scénarios de l'exposition pour l'évaluation du risque et la conception d'études sur le terrain, nous avons créé des corpus de données et obtenu la documentation à l'appui sur l'utilisation, par les oiseaux, de l'habitat agricole de l'écozone des plaines de forêts mixtes de la région des Grands lacs et du Saint-Laurent. Les données ont été tirées telles quelles de publications scientifiques, de thèses ainsi que de rapports des administrations publiques publiés depuis 1950 sur les régions du Canada et des États-Unis où les pratiques agricoles sont semblables à celles de l'écozone. Les données sur l'utilisation des habitats par les oiseaux (37% provenant d'emplacements canadiens) ont été disposées en tableaux pour 56 habitats agricoles (y compris 35 cultures) selon l'espèce, le mois, l'activité (par exemple quête de nourriture, nidification) et l'intensité de l'utilisation. En tout 168 espèces d'oiseaux, représentant une large gamme de régimes alimentaires, ont été observées dans les habitats agricoles caractéristiques de l'écozone. 76% de toute les données concernent 49 espèces. Les données tirées d'études effectuées au Canada portaient sur 60% de tous les habitats. Le nombre total d'espèces signalées comme utilisant les habitats cultivés et non cultivés dignes de mention était comme suit : 68 (maïs), 44 (foin), 44 (soja), 36 (trèfle rouge), 30 (blé), 30 (avoine), 29 (raisin), 28 (luzerne), 26 (bleuet), 19 (mélilot), 19 (cerises), 41 (pâturages), 30 (terres de culture abandonnées), 107 (boisés). L'utilité des données est limitée par leur faible nombre et leur faible qualité à l'égard de nombreux habitats et par la variabilité des espèces selon l'emplacement et le temps. Des études supplémentaires sont nécessaires sur la configuration spatiale des habitats agricoles dans l'écozone ainsi que sur l'utilisation de ces habitats par les oiseaux, notamment les cultures

agricultural pesticides (e.g. organically-farmed areas) could be useful for assessing ecological side-effects of agrochemicals. The future of wildlife in Canadian farmland will depend on the interspersion and conservation of adequate areas of unfarmed habitat, as well as on ensuring that adverse effects of agricultural practices, such as the use of pesticides and chemical fertilizers, in the surrounding landscape are minimized.

légumières et fruitières ainsi que les habitats non cultivés contigus aux cultures. Les travaux devraient également s'intéresser à l'utilisation des champs ensemencés de façon directe en raison de la forte quantité de pesticides systématiquement utilisés dans les champs soumis à un régime de conservation des sols. L'importance du modelé du paysage sur l'utilisation des champs cultivés par les oiseaux devrait également être étudiée. L'étude de l'utilisation des habitats agricoles par les oiseaux non exposés aux pesticides agricoles (par exemple les zones exploités de façon organique) pourrait être utile à l'évaluation des effets écologiques secondaires des produits agrochimiques. L'avenir de la faune dans les régions agricoles du Canada dépendra de la dissémination et de la conservation de zones convenables renfermant des habitats non cultivés, de même que de la réduction au minimum des effets négatifs des pratiques agricoles telles que l'emploi des pesticides et des engrais chimiques dans les éléments contigus du paysage.

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INTRODUCTION

Agricultural pesticides can adversely affect wildlife and their habitats (Bunyan 1985, Grue *et al.* 1986, O'Connor and Shrubb 1986, Sheehan *et al.* 1987). Pesticide impacts which have been observed include mortality as a result of direct exposure (Hill and Fleming 1982) or secondary poisoning from consumption of contaminated food (White *et al.* 1979, Balcomb 1983), impairment of reproductive output from sublethal exposure (Busby *et al.* 1990), and adverse modification of vegetation and food resources in wildlife habitats (Potts 1980, Rands 1985, O'Connor and Shrubb 1986). Given the quantity and extent of agricultural pesticides now being used in Canada (Statistics Canada 1986), and the broad spectrum of their biological activity, this issue is of increasing concern to Environment Canada and the public at large.

As part of Environment Canada, the Canadian Wildlife Service (CWS) is responsible for advising on risks to wildlife and their habitats associated with the new or continuing use of pesticides under the Pest Control Products Act. In order to evaluate the risks associated with the use of agricultural pesticides in Canada, we need information on the extent and degree of potential exposure of wildlife and their habitats in farmland, and on the intrinsic toxicity of the pesticides used (cf. Hardy and Stanley 1984, Stanley and Hardy 1984, Grue *et al.* 1986). Many factors need to be considered in determining exposure, including environmental chemistry and fate of pesticides, their formulation, the rate, frequency, timing and method of application, the amount of area treated, weather conditions during and following application, the proximity of wildlife habitat to treated areas, and the behavioural traits of wildlife species. In addition to evaluating risk, we need information on the extent and wildlife use of farmland habitats in Canada in order to design field studies to assess post-registration impacts of agricultural pesticides.

INTRODUCTION

Les pesticides agricoles peuvent nuire à la faune et à ses habitats (Bunyan, 1985; Grue *et al.*, 1986; O'Connor et Shrubb, 1986; Sheehan *et al.*, 1987). Leurs répercussions observées comprennent la mortalité du fait de l'exposition directe (Hill et Fleming, 1982), l'empoisonnement indirect, par l'ingestion d'aliments contaminés (White *et al.*, 1989; Balcomb, 1983), l'échec de la reproduction du fait de l'exposition à des concentrations sublétales (Busby *et al.*, 1990) et l'altération de la végétation et des ressources alimentaires de l'habitat (Potts, 1980; Rands, 1985; O'Connor et Shrubb, 1986). Étant donné les quantités de pesticides agricoles utilisés au Canada, la superficie traitée (Statistics Canada, 1986) de même que le vaste champ de leur activité biologique, Environnement Canada et le public en général sont de plus en plus préoccupés.

Faisant partie d'Environnement Canada, le Service canadien de la faune (SCF) est chargé, en application de la Loi sur les Produits Antiparasitaires, de la prestation de conseils sur les risques que pose pour la faune et son habitat l'emploi des pesticides, suivi ou pour la première fois. L'évaluation de ces risques dans le contexte agricole exige des données sur l'étendue et l'ampleur de l'exposition éventuelle de la faune et de son habitat dans les régions agricoles ainsi que sur la toxicité intrinsèque des pesticides utilisés (cf. Hardy et Stanley, 1984; Stanley et Hardy, 1984, Grue *et al.*, 1986). Il faut tenir compte de beaucoup de facteurs dans la détermination de l'exposition, y compris des caractéristiques chimiques et du devenir des pesticides dans l'environnement, de la nature de leur préparation, des doses, de la fréquence, du moment et de la méthode d'application, de la superficie traitée, des conditions météorologiques durant et après le traitement, de la proximité de l'habitat faunique et des caractéristiques éthologiques des espèces. Nous avons besoin de renseignements sur l'utilisation des habitats agricoles par la faune, non seulement pour

In this report, we focus on farmland habitats in the Mixed-Wood Plain (MWP) ecozone of the Great Lakes-St. Lawrence region (Figure 1). The MWP is one of fifteen ecozones in Canada delineated by Environment Canada (1986) on the basis of similarity in physiography, vegetation, soil/surface materials, and climate. We focussed on the MWP because it is the largest agricultural area in eastern Canada and pesticide usage is particularly extensive.

The MWP includes more farmland than any other ecozone in eastern Canada (Statistics Canada 1986). Farmland accounts for 41% of the 19.5 million hectares in the MWP. The remainder consists of forest lands, wetlands, fresh water, lands used for nonrenewable resource extraction, and lands which are built upon (e.g., urban, rural nonfarm, rural transportation networks).

Although large areas of farmland are treated annually with pesticides in all ecozones of Canada, usage is particularly extensive in the MWP. Pesticide use, as well as environmental contamination, habitat fragmentation, and high-density road traffic, are significant disturbances experienced by wildlife in this ecozone (Environment Canada 1986). In 1980, approximately 2.3 million hectares (29% of the total farmland) were treated at least once with herbicides, and 0.5 million ha (6%) were treated at least once with insecticides (Statistics Canada 1986). This represents an increase of 80% in the area treated with herbicides, and 63% increase in the area treated with insecticide compared to 1970. In southern Ontario, more than 50% of the farmland was treated at least once with pesticides in 1980.

No comprehensive databases currently exist for wildlife use of farmland in any part of Canada, including the MWP. The most extensive source of information has been compiled by Gusey and Maturgo (1972) who used information from state, fish and game, and natural resources departments, supplemented by Martin *et al.* (1961), to approximate wildlife use

évaluer le risque, mais également pour préparer les plans d'expérience des évaluations, sur le terrain, des répercussions des pesticides homologués.

Dans le présent rapport, nous nous attachons aux habitats de l'écozone des plaines des forêts mixtes de la région des Grands lacs et du Saint-Laurent (fig. 1). Cette écozone est l'une des quinze du Canada qu'a délimitées Environnement Canada (1986) d'après les similitudes de la physiographie, de la végétation, des sols et des matériaux de surface ainsi que du climat. Le choix de cette écozone s'explique par le fait qu'elle constitue la région agricole la plus étendue de l'est du Canada, où l'emploi des pesticides est particulièrement répandu.

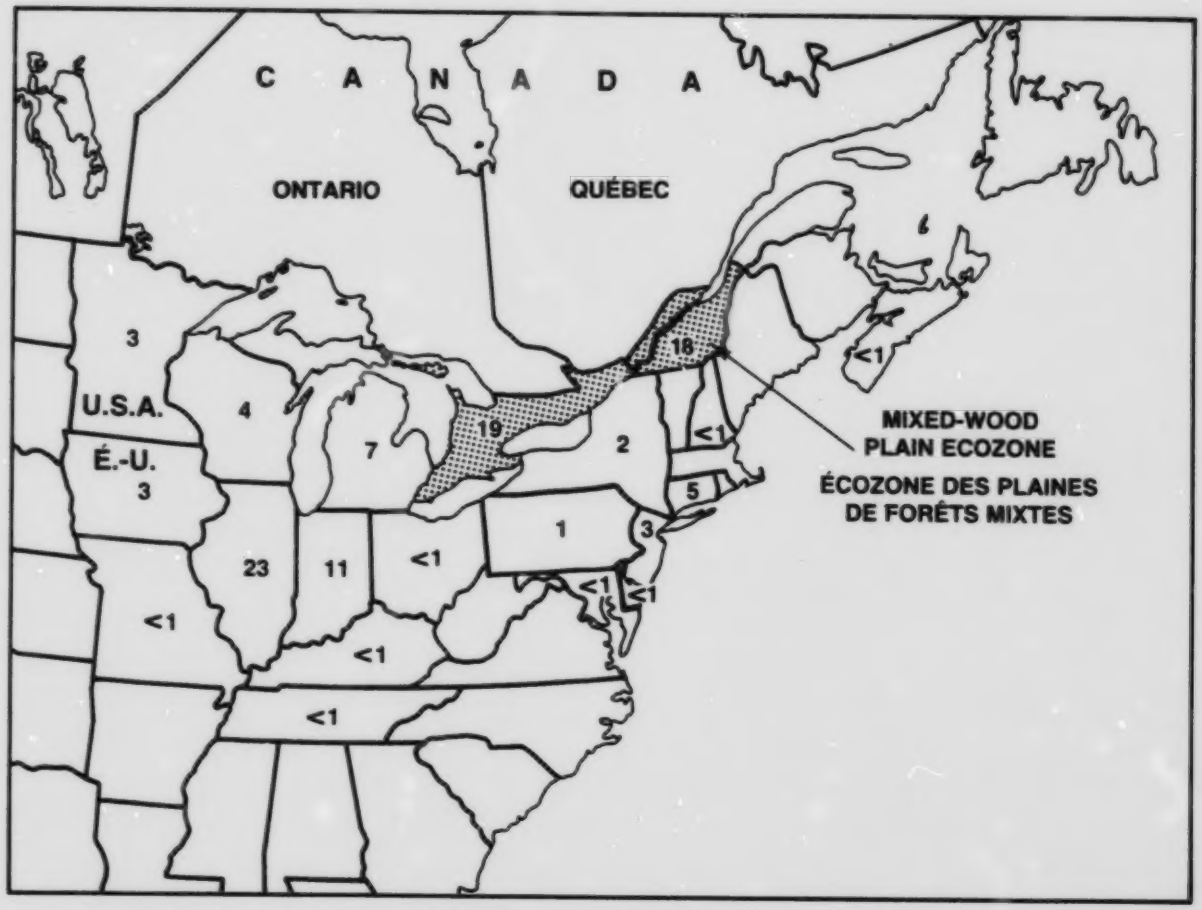
L'écozone comprend plus de territoire agricole que toute autre écozone de l'Est (Statistics Canada, 1986) : 41 % de sa superficie de 19,5 millions d'hectares. Le reste est constitué de forêts, de zones humides, d'eau douce, de mines et de carrières ainsi que d'habitats bâtis (milieu urbain, milieu rural non agricole, le réseau rural de transport).

Même si, chaque année, dans toutes les écozones du Canada on traite de vastes superficies du territoire agricole au moyen de pesticides, l'emploi de ces derniers est particulièrement répandu dans l'écozone qui nous intéresse. L'emploi de ces pesticides de même que la contamination de l'environnement, la fragmentation des habitats et la circulation routière dense sont des causes notables de traumatismes vécus par la faune dans l'écozone (Environment Canada, 1986). En 1990, 2,3 millions d'hectares (29 % de la superficie agricole totale) ont été traités au moins une fois aux herbicides, tandis que 0,5 million d'hectares (6 %) ont été traités au moins une fois aux insecticides (Statistics Canada, 1986). Ces taux représentent un accroissement de 80 % de la superficie traitée aux herbicides et de 63 % de la superficie traitée aux insecticides, par rapport à 1970. Dans le sud de l'Ontario, plus de la moitié de la superficie agricole a été traitée au moins

Figure 1.

Study locations used to document bird use of farmland habitats in the Mixed-Wood Plain (MWP) ecozone in the Great Lakes - St. Lawrence region of Canada. Percent of the bird use data abstracted is indicated by province and state.

Emplacements étudiés pour mesurer l'utilisation des habitats agricoles par les oiseaux dans l'écozone des plaines de forêts mixtes de la région des Grands lacs et du Saint-Laurent du Canada. Le pourcentage des données extraites sur l'utilisation est indiqué par province et par État.



of croplands in mainland U.S.A.

Our main objective was to develop databases and supporting documentation on the extent of farmland habitats in the MWP, and on wildlife use of those habitats. After a preliminary review of the published literature, we decided to focus on birds, recognizing that similar information on mammals would also be needed if our databases are to be comprehensive. We compiled the data by habitat to facilitate its use in the design of field studies for pesticide impact assessment, and in developing risk assessments for new or continuing uses of pesticides in the MWP, and other regions of Canada where the data are ecologically relevant. While we undertook analyses to examine limitations of the data, further analyses were beyond the scope of this project. However, we do identify additional studies which are needed to further our understanding of risks to wildlife and their habitats posed by modern agricultural practices in Canada.

METHODS

Land use and farmland habitats for the MWP were identified from the published literature and local knowledge. Land use and crop areas were compiled from agricultural

une fois aux pesticides en 1980.

Aucune base complète de données n'existe sur l'utilisation du territoire agricole canadien, y compris de l'écozone, par la faune. Le corpus le plus riche a été compilé par Gusey et Maturgo (1972), qui ont utilisé les renseignements fournis par les services chargés des ressources naturelles, de la pêche et de la chasse de chaque État, et ces renseignements sont complétés par ceux de Martin *et al.* (1961), pour en arriver à une approximation de l'utilisation, par la faune, des terres cultivées de la partie continentale des États-Unis.

Notre principal objectif était de créer des corpus et de réunir la documentation à l'appui sur l'étendue des habitats agricoles dans l'écozone ainsi que sur l'utilisation de ces habitats par la faune. Après un examen préliminaire des publications, nous avons décidé de nous attacher aux oiseaux, en reconnaissant que des renseignements similaires sur les mammifères seraient également nécessaires si nos bases de données devaient être complètes. Nous avons réuni les données selon l'habitat afin de faciliter leur emploi dans la conception des études des répercussions des pesticides sur le terrain ainsi quedans l'élaboration d'évaluations du risque lié à l'emploi, pour la première fois, ou suivi, de pesticides dans l'écozone ainsi que dans d'autres régions du Canada pour lesquelles les données sont écologiquement pertinentes. Nous avons entrepris des analyses pour examiner les limites des données, mais les analyses ultérieures sortent du cadre du présent travail. Toutefois, nous désignons les études supplémentaires qui sont nécessaires pour étoffer notre connaissance des risques que posent les pratiques agricoles modernes pour la faune et ses habitats au Canada.

MÉTHODES

L'occupation des sols et les habitats agricoles de l'écozone ont été déterminés à partir des publications et des renseignements obtenus localement. Les superficies affectées aux formes

statistics (Statistics Canada 1987, Statistique Canada 1987).

Bird use of farmland habitats characteristic of the MWP was abstracted from publications in scientific journals, graduate theses, and government reports (from both Canada and the U.S.A.). The search strategy was as follows:

- Acceptable study locations were initially limited to Ontario and Quebec. Due to the relatively few studies available, the scope was broadened to include locations with climates, farmland habitats and farming practices similar to those in the MWP. This included the Maritimes (New Brunswick, Nova Scotia, Prince Edward Island) and parts of the United States (Connecticut, Illinois, Indiana, Iowa, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Tennessee, Vermont, Virginia, West Virginia, and Wisconsin).

- Only studies since 1950 were included since farms and farming practices (particularly pesticide use) were substantially different prior to that time (McEwen and Stephenson 1979). The search included data up to and including 1988.

- A computer-assisted search provided a limited number of references. Most references were sourced by manual searches of current indices and abstracts, by personal communication with individuals from universities and government agencies, and from published papers.

Study results were abstracted and tabulated using the format of Gusey and Maturgo (1972). Data were computerized and tabulated separately for each reference according to habitat, species, month, activity (e.g. feeding, nesting), and intensity of use. The following conventions were used:

- Habitats were recorded, with very few exceptions, using the terms in the reference.

d'occupation et aux cultures sont tirées des statistiques agricoles (Statistics Canada, 1987; Statistique Canada, 1987).

L'utilisation, par les oiseaux, des habitats agricoles caractéristiques de l'écozone a été déterminée par dépouillement des publications scientifiques, des thèses de diplômés universitaires et des rapports gouvernementaux (tant du Canada que des États-Unis). La stratégie de dépouillement a été la suivante :

- Nous nous sommes d'abord limitées aux études dont le cadre était l'Ontario et le Québec. Ce petit corpus nous a amenées à élargir le dépouillement aux climats, aux habitats et aux pratiques agricoles semblables à ceux de l'écozone : les Maritimes (Nouveau-Brunswick, Nouvelle-Écosse, Île-du-Prince-Édouard) et certains États américains (Connecticut, Illinois, Indiana, Iowa, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, New Hampshire, New Jersey, New York, Ohio, Pennsylvanie, Rhode Island, Tennessee, Vermont, les deux Virginies et le Wisconsin).

- Nous n'avons tenu compte que des études effectuées depuis 1950, les exploitations et les pratiques agricoles (notamment l'emploi des pesticides) depuis cette année différant considérablement de celles des années antérieures (McEwen et Stephenson, 1979). Notre dépouillement s'est étendu jusqu'à 1988 inclusivement.

- La recherche assistée par ordinateur a livré peu de références. Celles-ci, pour la plupart, nous les avons trouvées par la recherche manuelle dans les index et les recueils de résumés scientifiques, par la consultation d'articles publiés et en nous adressant personnellement à des universitaires et à des organismes étatiques.

Nous avons dépouillé les études et mis les résultats sous forme de tableaux selon la présentation de Gusey et Maturgo (1972). Pour chaque source consultée, les données ont été informatisées et mises en tableaux séparément,

- Species, not reported in the Breeding Bird Atlas for Ontario (Cadman *et al.* 1987), were not included. A similar reference for Quebec was not available. Species scientific names and English common names follow the revised list of the American Ornithologists' Union (1983). French common names follow Ouellet and Gosselin (1983). Species were tabulated by taxonomic order according to Godfrey (1986). Foraging guild designations follow DeGraaf *et al.* (1985).

- Data published only by season were recorded by month as follows: spring (March, April, May), summer (June, July, August), fall (September, October, November) and winter (December, January, February).

- If activity was not originally reported on a monthly basis, it was recorded as occurring in all months of the study.

- Intensity of use was recorded in the same units as in the reference, except that imperial measurements were converted to metric. For some references, use data were also categorized by relative intensity.

The references used were annotated for study location, objective, methods, results, source of the data abstracted, and habitat(s) (Appendix 1).

selon l'habitat, l'espèce, le mois, l'activité (c'est-à-dire quête de nourriture, nidification) et l'intensité de l'utilisation. Nous avons adopté les conventions suivantes :

- Les habitats ont été enregistrés, avec très peu d'exception, selon la terminologie utilisée dans les sources dépouillées.

- Les espèces non signalées dans le Breeding Bird Atlas for Ontario (Cadman *et al.*, 1987) ont été omises de l'étude. Nous n'avons pas pu consulter d'ouvrages semblables pour le Québec. Les noms scientifiques et les noms vernaculaires anglais sont conformes à la liste révisée de l'American Ornithologists' Union (1983). Les noms vernaculaires français sont de Ouellet et Gosselin (1983). La présentation des espèces suit l'ordre taxonomique de Godfrey (1986). La désignation de l'éthologie de la quête de nourriture s'inspire de DeGraaf *et al.* (1985).

- Les données se rapportant uniquement à une saison correspondent aux mois comme suit : printemps (mars, avril, mai); été (juin, juillet, août); automne (septembre, octobre, novembre); hiver (décembre, janvier, février).

- Si une forme d'activité n'avait pas été décrite selon le mois, nous avons posé qu'elle s'était exercée durant tous les mois visés par l'étude dépouillée.

- L'intensité de l'utilisation a été notée avec les mêmes unités de grandeur que dans la source consultée, sauf que les grandeurs impériales ont été converties en grandeurs métriques. Dans le cas de certaines sources, les données sur l'utilisation de l'habitat ont également été catégorisées selon une échelle relative.

Les sources consultées ont été annotées quant à l'emplacement, à l'objectif, aux méthodes, aux résultats, à la source des données extraites et aux habitats (annexe 1).

RESULTS

Land Use.- Farms average about 70 hectares in the MWP (Statistics Canada 1986). In 1986, 60% of all farmland was cropped (Figure 2, details in Appendix 2). An additional 17% was used as managed or native pasture. Only 16% of farmland remained as woodland. Grains (cereals and corn) were grown on 44% of all croplands (Figure 3). Hay and fodder crops accounted for an additional 41%. Although quite a variety of vegetables and fruits were grown, they accounted for only 2% and 1% of all croplands, respectively. Corn for grain, silage or human consumption was grown extensively (Table 1). Large numbers of hectares were also cropped to barley (for grain or fodder), wheat (spring or winter) and soybean. Apples were the most extensively grown fruit crop. Potatoes, tomatoes, peas and beans were the most extensively cropped vegetables.

Bird Use of Farmland Habitats.- About 37% of the data abstracted from the 58 references used to document bird use of farmland habitats characteristic of the MWP (Appendix 1) were from studies conducted in Canada (Figure 1). Additional Canadian references were sourced but were not included because they did not add new information to the database at the time they were reviewed (e.g. Weatherhead *et al.* 1980, Gartshore *et al.* 1982, McNicol *et al* 1982), or they were sourced after the database had been compiled (e.g. Wishart and Bider 1976, Smith 1987, Lima 1988, Masse and Raymond 1988, Quirling and Timmins 1988).

Bird use data were abstracted for 56 farmland habitats (including 35 crops) with additional data for corn and soybean grown under different cultivation practices or at different growth stages (summarized in Table 1, details in Appendix 3). About 60% of all habitats included data from studies conducted in Canada. Notable crops for which data were not available included canola (totalling 36,260 ha),

RÉSULTATS

Occupation des sols. - Dans l'écozone, l'étendue des exploitations agricoles est en moyenne de 70 ha (Statistics Canada, 1986). En 1986, 60% de tout le territoire agricole était en cultures (fig. 2, détails à l'annexe 2); 17% servait de pâturages aménagés ou naturels; 16% seulement portait encore du bois. Les céréales (y compris le maïs) occupaient 44% de la superficie cultivée (fig. 3); le foin et les cultures fourragères, 41%; les cultures légumières et fruitières, même si elles étaient très variées, seulement 2 et 1%, respectivement. Le maïs-grain, le maïs à ensiler et le maïs sucré occupaient une vaste superficie (tableau 1). Une vaste superficie également était consacrée à l'orge (céréalier ou fourrager), au blé (de printemps ou d'hiver) et au soja. Le fruit le plus cultivé était la pomme; les légumes les plus cultivés, la pomme de terre, la tomate, le pois et le haricot.

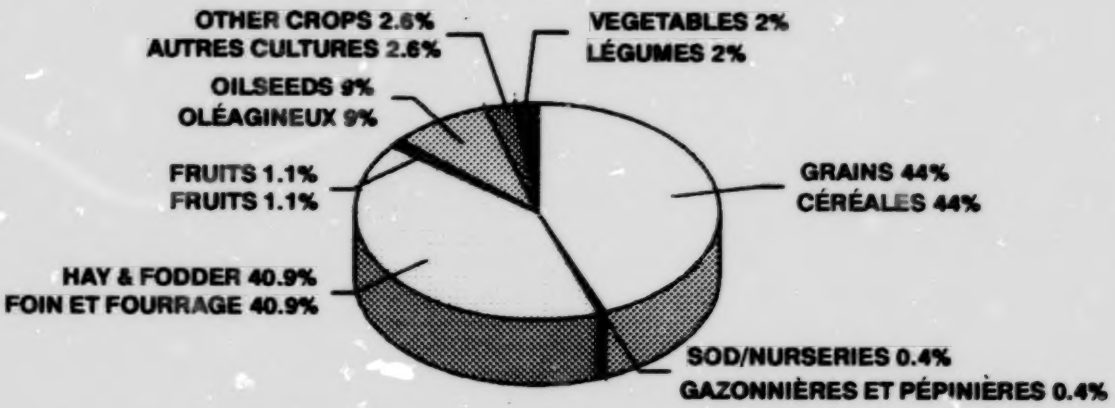
Utilisation des habitats agricoles par les oiseaux. - 37% des données tirées des 58 sources dépouillées sur l'utilisation des habitats agricoles caractéristiques de l'écozone par les oiseaux (annexe 1) provenaient d'études réalisées au Canada (fig. 1). Nous avons mis la main sur d'autres travaux canadiens, mais nous ne les mentionnons pas parce qu'ils n'ont rien ajouté de neuf à notre corpus (p. ex. Weatherhead *et al.*, 1980; Gartshore *et al.*, 1982; McNichol *et al*, 1982) ou parce qu'ils ont été trouvés après la fin de la compilation du corpus (p. ex. Wishart et Bider, 1976; Smith, 1987; Lima, 1988; Masse et Raymond, 1988; Quirling et Timmins, 1988).

Les données dépouillées concernent 56 habitats agricoles (y compris 35 cultures), d'autres données s'ajoutant pour le maïs et le soja cultivés selon des méthodes différentes ou se trouvant à des stades de croissance différents (résumés au tableau 1, détails à l'annexe 3). Pour 60% des habitats, nous possédons des données tirées d'études effectuées au Canada. Les cultures importantes sur lesquelles nous n'avons pas trouvé de données comprennent le

Figure 2.

Farmland composition in the MWP ecozone in Canada * (Abstracted from Statistics Canada 1987 and Statistique Canada 1987, details in Appendix 2)

Composition du territoire agricole dans l'écozone des plaines de forêts mixtes au Canada* (selon Statistics Canada (1987) et Statistique Canada (1987); détails à l'annexe 2).



TOTAL CROPLAND = 4,699,576 Ha
SUPERFICIE TOTALE CULTIVÉE = 4 699 576 Ha

*Cropland=Area sown for harvest i.e. field crops, fruits, vegetables, green/mushroom houses, nurseries
Superficie Cultivée = Superficie occupée par des cultures de plein champ, fruitières, légumières, en serres, en champignonnières et en pépinières.

Pasture = Managed (pasture/grazing land cultivated, drained, irrigated, fertilized, seeded, sprayed) + Native (pasture/grazing land that has not been cultivated, etc.)
Pâturages = Pâturages aménagés (pâturages ou parcours cultivés, drainés, irrigués, fertilisés, ensemencés et traités) ainsi que les pâturages naturels (pâturage et parcours non cultivés, etc.).

Summer fallow = Idle cropland which may have been cultivated or sprayed to control weeds
Jachère = Terrain dont le sol peut avoir été travaillé ou qui peut avoir reçu un traitement herbicide, mais qui est au repose.

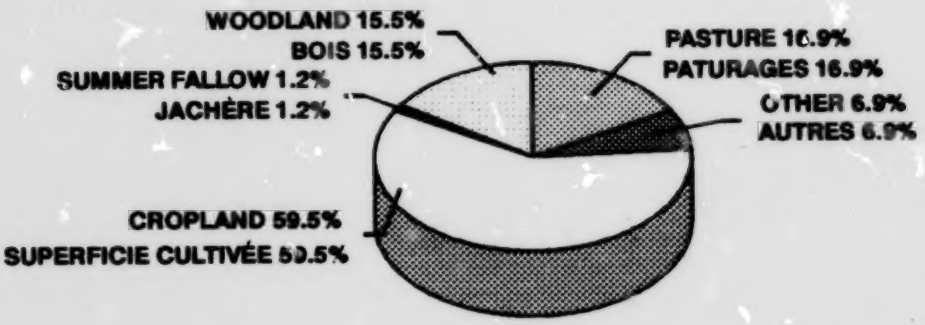
Woodland = Woodlots, land leased for cutting, sugar bush, cutovers, windbreaks
Bois = Boisés, concessions de coupe, erablieres, terrains dont les arbres ont été coupés, brise-vent.

Other = Other managed land, shrubby land, wetlands, rocky land, rural nonfarm
Autres = Autres terrains aménagés, couverts d'une végétation frutescent, zones humides, terrains rocheux, terrains ruraux non exploités pour l'agriculture

Figure 3.

Cropland composition in the MWP ecozone in Canada (Abstracted from Statistics Canada 1987 and Statistique Canada 1987; details in Appendix 2)

Composition de la superficie cultivée dans l'écozone des plaines de forêts mixtes au Canada(selon Statistics Canada (1987) et Statistique Canada (1987); détails à l'annexe 2).



TOTAL FARMLAND = 7,895,059 Ha
TERRITOIRE AGRICOLE TOTAL = 7 895 059 Ha

Table 1.

Summary of bird use of farmland habitats characteristic of the Mixed-Wood Plain (MWP) ecozone in Canada. NR indicates not reported. Details in Appendices 2 and 3.

Habitat Reported	MWP Area (ha)	% Farmland	No. Bird Species reported
Tame Hay:	1 614 195	20.3	
Hay			44
Alfalfa			28
Clover-red			36
Clover-sweet			19
Alfalfa+Timothy			1
Timothy			1
Trefoil			1
Grain Crops:			
Corn	1 257 352[a]	15.8	68[b]
- generic			60
- notill			27
- notill corn			7
- notill sod			9
- sprouting			14
- stubble			26
Barley	365 964[c]	4.6	5
Wheat - winter	268 079	3.4	5
- spring	67 090	0.8	NR
- generic			30
Mixed Grain	232 668	2.9	
- Wheat+Oats			1
- Wheat+Rye			1
Oats	180 758[d]	2.3	30
Rye	25 858[e]	0.3	2
Buckwheat	13 762	0.2	3
Sorghum	NR	-	1
Oilseed Crops:			
Soybean	384 639	4.8	44[f]
- generic			36
- notill			26
- notill corn			7
- stubble			20
Sunflower	1 141	<0.1	3
Other	39 474	0.5	NR

Continued ...

Table 1 continued ...

Habitat Reported	MWP Area (ha)	% Farmland	No. Bird Species Reported
Other Crops:			
Beans-dry	55 860	0.7	3
Tobacco	29 298	0.4	5
Peas-dry	462	<0.1	3
Other	36 367	0.5	NR
Fruit Crops:			
Apple	21 955	0.3	7
Grape	9 398	0.1	29
Peach	3 410	<0.1	2
Plum	1 740	<0.1	1
Cherry	1 585[a]	<0.1	19
Blueberry	349	<0.1	26
Mulberries	NR	-	3
Crabapples	NR	-	2
Other	12 543	0.2	NR
Vegetable Crops:			
Potato	26 323	0.3	4
Tomato	16 079	0.2	2
Peas	11 677	0.1	1
Beans	9 371	0.1	1
Canteloupe	227	<0.1	1
Other	30 442	0.4	NR
Sod/Turf	12 577	0.2	13
Nursery Products	7 933	0.1	NR
Other managed lands:			
Grazing Land	1 333 025[b]	16.8	
- Pasture			41
- Grassland			10
Fields - Fallow	97 707	1.2	2
- Tilled			18
Other	163 078	2.1	
- Strip Cover			14
- Ditches			19
- Feedlots			1
- Rights-of-way			6

Continued ...

Table 1 continued ...

Habitat Reported	MWP Area (ha)	% Farmland	No. Bird Species Reported
Woodland:	1 224 363	15.4	
Fencerows			56
Shelterbelts			45
Forest edges			11
Woodlots			107
Other Lands:	305 081	3.8	
Abandoned buildings			5
Urban			26
Urban-cemetery			21
Old fields			30
Lakes/Ponds			17
Rivers			15
Marshes/Bogs			8
Streams			4
Total Farmland	7 895 090	100	168

[a] Appendix 1: Grain+Fodder+Sweet Corn
[b] Appendix 2: All corn habitats
[c] Appendix 1: Grain+Fodder Barley
[d] Appendix 1: Grain+Fodder Oats
[e] Appendix 1: Spring+Fall Rye
[f] Appendix 2: All soybean habitats
[g] Appendix 1: Sour+Sweet Cherries
[h] Appendix 1: Improved+Unimproved Pasture

Tableau 1.

Summaire de l'utilisation par les oiseaux, des habitats agricoles caractéristiques de l'écozone des plaines de forêts mixtes au Canada. NS signifie "non signalé." Détails dans les annexes 2 et 3.

Habitat Signalées	Superficie dans l'écozone (ha)	% de la Superficie Agricole	Nbre d'espèces d'oiseaux signalées
Foin cultivé:	1 614 195	20.3	
Foin			44
Luzerne			28
Tréfle rouge			36
Mélilot			19
Luzerne + Fléole des prés			1
Fléole des prés			1
Tréfle			1
Céréales:			
Maïs	1 257 352 [a]	15.8	68[b]
- sans autre précision			60
- semis direct			27
- semis direct sur maïs			7
- semis direct sur gazon			9
- en germination			14
- chaumes			26
Orge	365 964[c]	4.6	5
Blé, d'hiver	268 079	3.4	5
de printemps	67 090	0.8	NS
sans autre précision			30
Céréales mélangées	232 668	2.9	
- Blé et Avoine			1
- Blé et Siegle			1
Avoine	180 758[d]	2.3	30
Siegle	25 858[e]	0.3	2
Sarrasin	13 762	0.2	3
Sorgho	NS	-	1

suite ...

Tableau 1 suite ...

Habitat Signalées	Superficie dans l'écozone (ha)	% de la Superficie Agricole	Nbre d'espèces d'oiseaux signalées
Oléagineux:			
Soja	384 639	4.8	44/
- sans autre précision			36
- semis direct			26
- semis direct sur maïs			7
- chaumes			20
Tournesol	1 141	<0.1	3
Autres	39 474	0.5	NS
Autres Cultures:			
Haricots secs	55 860	0.7	3
Tabac	29 298	0.4	5
Pois secs	462	<0.1	3
Autres	36 367	0.5	NS
Cultures des Fruits:			
Pommes	21 955	0.3	7
Raisins	9 398	0.1	29
Pêches	3 410	<0.1	2
Prunes	1 740	<0.1	1
Cerises	1 585/	<0.1	19
Bleuets	349	<0.1	26
Mûres	NS	-	3
Pommettes	NS	-	2
Autres	12 543	0.2	NS
Cultures des Légumes:			
Pommes de terre	26 323	0.3	4
Tomates	16 079	0.2	2
Pois	11 677	0.1	1
Haricots	9 371	0.1	1
Melons brodés	227	<0.1	1
Autres	30 442	0.4	NS
Gazonnières	12 577	0.2	13
Nursery Products	7 933	0.1	NS

suite...

Tableau 1 suite...

Habitat Signalées	Superficie dans l'écozone (ha)	% de la Superficie Agricole	Nbre d'espèces d'oiseaux signalées
Autres terrains aménagés:			
Parcours	1 333 025[a]	16.8	
- Pâturages			41
- Prairies			10
Champs - en jachère	97 707	1.2	2
- labourés			18
Autres	163 078	2.1	
- Bandes non cultivées			14
- Fossés			19
- Parcs d'engraissement			1
- Emprises			6
Terrains boisées:	1 224 363	15.4	
Bords de clôtures			56
Rideaux abris			45
Lisières de forêt			11
Boisés			107
Autre modes d'occupation:	305 081	3.8	
Immeubles abandonnés			5
Zones urbains			26
Cimetières urbains			21
Terres de culture abandonnées			30
Lacs et étangs			17
Rivières			15
Marécages et tourbières			8
Ruisseaux			4
Total Farmland	7 895 090	100	168

[a] Annexe 1: Céréales, cultures fourragères et maïs sucré
[b] Annexe 2: Tous les habitats de maïsiculture
[c] Annexe 1: Céréales plus orge fourrager
[d] Annexe 1: Céréales plus avoine fourragère
[e] Annexe 1: Siegle de printemps et d'automne
[f] Annexe 2: Tous les habitats de culture du soja
[g] Annexe 1: Griottes et guignes
[h] Annexe 1: Pâturages améliorés et non améliorés

forage seed (30,604 ha), vegetables such as carrots and cabbage (30,442 ha), fruits such as pears, raspberries, and strawberries (12,543 ha), and nursery products (7,933 ha).

A total of 68 bird species were reported to use corn (Table 1). The number of species using other crops of note were hay (44), soybean (44), red clover (36), wheat (30), oats (30), grapes (29), alfalfa (28), blueberry (26), sweet clover (19) and cherry (19). Pastures and old fields had 41 and 30 bird species reported, respectively. Woodlots had a particularly diverse bird fauna with 107 species reported. In general, the quantity and quality of bird use data varied widely among the habitats reported. For about two-thirds of the crops reported, few bird species were reported, and for many crops, information on season of use for those species was lacking. Similar data limitations existed for other managed habitats such as grasslands, ditches, and rights-of-way, and for noncrop habitats such as forest edges and wetlands. The absence of particular bird species from any given habitat or monthly period does not necessarily mean that the species is not there. Often the data were collected for quite different reasons than to determine bird use of farmland habitats. Study methods and reporting styles also varied widely among studies and consequently among habitats. Similarly, a species reported to use a habitat may or may not actually be present in a given location or time period.

Most of the references used noted only the presence of certain species and provided little or no information on activity or intensity of use. When sufficient data were available, intensity ratings were applied. However, intensity of use was particularly difficult to abstract, and should be used cautiously. Footnotes to the appended tables should be examined carefully since methods for measuring intensity of use vary among studies. In retrospect, the application of an intensity rating to data from a variety of studies may not have been the best way of quantifying habitat use because of variation among the geographic locations from which use

canola (36 260 ha), les fourrages de semence (30 604 ha), les légumes tels que les carottes et les choux (30 442 ha), les fruits tels que les poires, les framboises et les fraises (12 543 ha) ainsi que les produits cultivés en pépinière (7 933 ha).

En tout, 68 espèces d'oiseaux utiliseraient des habitats de maïsiculture (tableau 1). Le nombre d'espèces utilisant d'autres cultures dignes de mention se présente comme suit : 44 (foin); 44 (soja); 36 (trèfle rouge); 30 (blé); 30 (avoine); 29 (raisins); 28 (luzerne); 26 (bleuets); 19 (mélilot); 19 (cerises). Les pâturages et les terres de culture abandonnées hébergeaient respectivement 41 et 30 espèces d'oiseaux. Les boisés abritaient une avifaune particulièrement diversifiée, 107 espèces signalées. En général, le nombre et la qualité des données sur l'utilisation de ces habitats par les oiseaux ont beaucoup varié selon les habitats. Pour les deux tiers des cultures, on a signalé peu d'espèces, tandis que pour de nombreuses cultures, on ne possède aucun renseignement sur la saison d'utilisation par ces espèces. Des lacunes semblables s'observent pour d'autres habitats aménagés tels que les prairies, les fossés, les emprises ainsi que pour les habitats non cultivés tels que les lisières de forêts et les terres humides.

La non-mention d'un oiseau dans un habitat ou en un mois donnés ne signifie pas nécessairement l'absence de l'espèce. Souvent, les données ont été collectées dans un but tout à fait différent de celui de déterminer l'utilisation des habitats agricoles. Les méthodes d'étude ainsi que le style de présentation des données varient également beaucoup d'une étude à l'autre, et, par conséquent, d'un habitat à l'autre. De même, une espèce que l'on signale comme utilisant un habitat peut ou peut ne pas effectivement être présente dans une localité donnée ou à un moment donné.

La plupart des références consultées ne notaient que la présence de certaines espèces et renseignaient peu ou point sur l'activité de ces dernières ou sur l'intensité de l'utilisation des

data were abstracted (e.g. Quebec, Canada vs. Indiana, U.S.A.), variation in techniques used to census wildlife populations (e.g. no. nests/100 ha vs. no. birds/100 ha vs. no. birds/hr/day), and variation in species use of farmland habitats, even within the same geographical region.

A total of 168 bird species, representing a wide range of foraging guilds, were reported to use farmland habitats characteristic of the MWP (Table 1 and 2, Appendix 4). Season of use was totally unspecified for only 9% of all species reported. Forty-nine species (29% of all species) accounted for 76% of all the bird use data abstracted (Table 2). Any bird species using farmland habitats in the MWP may potentially be exposed to agricultural pesticides through consumption of contaminated food (foraging guild(s) for each species reported is presented in Appendix 4). However, of the most frequently reported species, 33 forage, glean, graze or hawk their food (insects, earthworms, plants, nuts, vertebrates or a variety of these) from the ground or very low, weedy vegetation during the breeding season (Table 2). For some of these species, potential ingestion of granular pesticides (especially insecticides) used in some crop types (particularly corn) poses an additional cause for concern (cf. Mineau 1988).

habitats. Lorsque nous avons disposé de données suffisantes, nous avons coté l'intensité de l'utilisation. Toutefois, cette intensité a été particulièrement difficile à tirer des publications, et les données à son égard devraient être utilisées avec prudence. Les notes ajoutées au bas des tableaux joints devraient être étudiées minutieusement, car les méthodes de mesure de l'intensité varient selon les études. On peut, après coup, penser qu'une cote d'intensité affectant les résultats de diverses études n'ait pas été le meilleur moyen de quantifier l'utilisation de l'habitat, à cause de l'écart entre les emplacements géographiques d'où proviennent les données (p. ex. le Québec par opposition à l'Indiana), des différences entre les techniques de recensement des populations fauniques (p. ex. le nombre de nids sur 100 ha, le nombre d'oiseaux sur 100 ha ou le nombre d'oiseaux par heure et par jour) ou des variations dans l'utilisation de l'habitat agricole par une espèce, même à l'intérieur d'une région géographique.

En tout, 168 espèces d'oiseaux, représentant une large gamme de régimes alimentaires, ont été observées dans les habitats agricoles caractéristiques de l'écozone (tableaux 1 et 2, annexe 4). La saison n'est pas précisée pour seulement 9% des espèces signalées. 76% de toutes les données extraites sur l'utilisation de l'habitat concernent 49 espèces d'oiseaux (29%) (tableau 2). Toute espèce utilisant des habitats agricoles de l'écozone est susceptible d'être exposée à des pesticides agricoles en consommant de la nourriture contaminée (le régime alimentaire de chaque espèce est présenté à l'annexe 4). Toutefois, parmi les espèces les plus souvent signalées, 33 sont éclectiques, grapillent, pâturent ou poursuivent leur nourriture (insectes, vers de terre, plantes, graines, vertébrés) au sol ou dans la végétation ligneuse très basse durant la reproduction (tableau 2). Pour certaines de ces espèces, la possibilité d'ingestion de pesticides sous forme de granulés (plus particulièrement d'insecticides) dans certains types de cultures (notamment le maïs) constitue un motif supplémentaire d'inquiétude (cf. Mineau, 1988).

Table 2.

Bird species occurring most frequently in the habitat use data abstracted for the MWP ecozone in Canada. See Appendix 4 for a complete listing of species, common/scientific names, and foraging guild definitions/designations.

Species	No. Records	Breeding Season Foraging Guild		
		Food Type	Substrate	Technique
European Starling	73	Omnivore	ground	forager
Red-winged Blackbird	70	Omnivore	ground	forager
American Robin	56	Omnivore	lower-canopy	forager
		Vermivore	ground	gleaner
Common Grackle	52	Omnivore	ground	forager
Brown-headed Cowbird	40	Omnivore	ground	forager
Mourning Dove	39	Omnivore	ground	forager
American Crow	38	Omnivore	ground	forager
Eastern Meadowlark	33	Insectivore	ground	gleaner
American Goldfinch	32	Omnivore	lower-canopy	forager
			ground	forager
Killdeer	29	Insectivore	ground	gleaner
Song Sparrow	29	Omnivore	lower-canopy	forager
			ground	forager
Northern Flicker	26	Insectivore	ground	gleaner
Canada Goose	25	Herbivore	water	dabbler
			ground	grazer
House Sparrow	25	Granivore	ground	gleaner
Brown Thrasher	24	Omnivore	ground	forager
			lower-canopy	forager
Blue Jay	22	Omnivore	ground	forager
			upper-canopy	forager
Horned Lark	22	Omnivore	ground	gleaner
Eastern Kingbird	20	Insectivore	air	sallier
Indigo Bunting	20	Omnivore	lower-canopy	forager
Northern Oriole	20	Omnivore	upper-canopy	forager
Northern Cardinal	19	Omnivore	ground	forager
Bobolink	19	Omnivore	ground	forager
Barn Swallow	18	Insectivore	air	screener
Vesper Sparrow	18	Omnivore	ground	forager
Ring-necked Pheasant	17	Omnivore	ground	forager

Continued ...

Table 2 continued ...

Species	No. Records	Breeding Season Foraging Guild		
		Food Type	Substrate	Technique
Gray Catbird	15	Omnivore	ground	forager
			lower-canopy	forager
Cedar Waxwing	15	Insectivore	air	sallier
		Frugivore	upper-canopy	gleaner
Savannah Sparrow	15	Omnivore	ground	forager
Northern Bobwhite	14	Omnivore	ground	forager
Rock Dove	14	Omnivore	ground	forager
Downy Woodpecker	14	Insectivore	bark	gleaner
		Frugivore	lower-canopy	gleaner
Eastern Bluebird	14	Insectivore	ground	gleaner
		Frugivore	lower-canopy	gleaner
Red-tailed Hawk	13	Carnivore	ground	hawker
American Kestrel	13	Insectivore	air	hawker
		Carnivore	ground	hawker
Upland Sandpiper	13	Insectivore	ground	gleaner
Field Sparrow	13	Omnivore	ground	forager
Dark-eyed Junco	13	Omnivore	ground	forager
Red-headed Woodpecker	12	Insectivore	air	sallier
		Insectivore	bark	gleaner
Rose-breasted Grosbeak	12	Omnivore	upper-canopy	forager
Ring-billed Gull	11	Insectivore	ground	gleaner
		Carnivore	ground	hawker
Purple Martin	11	Insectivore	air	screener
White-breasted Nuthatch	11	Insectivore	bark	gleaner
American Tree Sparrow	11	Omnivore	ground	forager
Chipping Sparrow	11	Omnivore	ground	forager
Grasshopper Sparrow	11	Omnivore	ground	forager
Northern Harrier	10	Carnivore	ground	hawker
Chimney Swift	10	Insectivore	air	screener
Hairy Woodpecker	10	Insectivore	bark	gleaner
		Frugivore	lower-canopy	gleaner
Common Yellowthroat	10	Insectivore	lower-canopy	gleaner
Total No. Records in Database		1432		
Total No. Species in Database		168		

Tableau 2. - Espèces d'oiseaux le plus souvent signalées relativement à l'utilisation des habitats de l'écozone des plaines de forêts mixtes au Canada. Voir l'annexe 4 pour l'énumération complète des espèces, les noms vernaculaires et scientifiques ainsi que la définition et la désignation des modes de quête de la nourriture.

Espèce	Nbre d'enregis-trements	Régime alimentaire en période de reproduction		
		Régime	Milieu	Technique
Étourneau sansonnet	73	omnivore	sol	éclectique
Carouge à épaulettes	70	omnivore	sol	éclectique
Merle d'Amérique	56	omnivore	strate inf.	éclectique
		vermivore	sol	grapille
Quiscale bronzé	52	omnivore	sol	éclectique
Vacher à tête brune	40	omnivore	sol	éclectique
Tourterelle triste	39	omnivore	sol	éclectique
Corneille d'Amérique	38	omnivore	sol	éclectique
Sturnelle des prés	33	insectivore	sol	grapille
Chardonneret jaune	32	omnivore	strate inf.	éclectique
			sol	éclectique
Pluvier kildir	29	insectivore	sol	grapille
Bruant chanteur	29	omnivore	strate inf.	éclectique
			sol	éclectique
Pic flamboyant	26	insectivore	sol	grapille
Bernache du Canada	25	herbivore	eau	barbote
			sol	pâture
Moineau domestique	25	granivore	sol	grapille
Moqueur roux	24	omnivore	sol	éclectique
			strate inf.	éclectique
Geai bleu	22	omnivore	sol	éclectique
			strate inf.	éclectique
Alouette cornue	22	omnivore	sol	grapille
Tyran tritri	20	insectivore	air	chasse au perché
Passerin indigo	20	omnivore	strate inf.	éclectique
Oriole du Nord	20	omnivore	strate sup.	éclectique
Cardinal rouge	19	omnivore	sol	éclectique
Goglu	19	omnivore	sol	éclectique
Hirondelle des granges	18	insectivore	air	chasse en vol
Bruant vespéral	18	omnivore	sol	éclectique
Faisan de chasse	17	omnivore	sol	éclectique
Moqueur chat	15	omnivore	sol	éclectique
			strate inf.	éclectique

...suite

Tableau 2 suite...

Espèce	Nbre d'enregis-trements	Régime alimentaire en période de reproduction		
		Régime	Milieu	Technique
Jaseur des cèdres	15	insectivore	air	chasse au perché
		frugivore	strate sup.	grapille
Bruant des prés	15	omnivore	sol	éclectique
Colin de Virginie	14	omnivore	sol	éclectique
Pigeon biset	14	omnivore	sol	éclectique
Pic mineur	15	insectivore	écorce	grapille
		frugivore	strate inf.	grapille
Merle-bleu de l'Est	14	insectivore	sol	grapille
		frugivore	strate inf.	grapille
Buse à queue rousse	13	carnivore	sol	poursuit proie
Crécerelle d'Amérique	13	insectivore	air	poursuit proie
		carnivore	sol	poursuit proie
Maubèche des champs	13	insectivore	sol	grapille
Bruant des champs	13	omnivore	sol	éclectique
Junco ardoisé	13	omnivore	sol	éclectique
Pic à tête rouge	12	insectivore	air	chasse au perché
		insectivore	écorce	grapille
Cardinal à poitrine rose	12	omnivore	strate sup.	éclectique
Goéland à bec cerclé	11	insectivore	sol	grapille
		carnivore	sol	poursuit proie
Hirondelle noire	11	insectivore	air	chasse en vol
Sittelle à poitrine blanche	11	insectivore	écorce	grapille
Bruant hudsonien	11	omnivore	sol	éclectique
Bruant familier	11	omnivore	sol	éclectique
Bruant sauterelle	11	omnivore	sol	éclectique
Busard Saint-Martin	10	carnivore	sol	poursuit proie
Martinet ramoneur	10	insectivore	air	chasse en vol
Pic chevelu	10	insectivore	écorce	grapille
		frugivore	strate inf.	grapille
Paruline masquée	10	insectivore	strate inf.	grapille

Nbre total d'enregistrements dans le corpus : 1 432
Nbre total d'espèces dans le corpus : 168

DISCUSSION

The information presented in this report can be used to design field studies to assess pesticide impacts, and to generate exposure scenarios for birds in farmland habitats in the MWP, and in other regions of Canada where the data are ecologically relevant. Given the limitations in the nature, quantity and quality of information available, these data can provide only a first approximation of actual use by birds.

Additional studies are needed on the spatial configuration of farmland habitats in the MWP and wildlife use of those habitats (particularly vegetable and fruit crops and noncrop habitats adjacent to fields) to improve our assessments of potential pesticide impacts on birds and other wildlife. CWS has initiated field projects in Ontario and Saskatchewan to provide further data on bird use of selected crops and adjacent noncrop habitats in these regions. Although the current report focusses on bird use of farmland habitats, the following references provide reliable use data for small mammals: Wegner (1976), Yahner (1983a), Warburton and Klimstra (1984), Benson *et al.* (1985), Castrale (1986), and Getz and Brightly (1986). Castrale (1986), in particular, has cited several additional references on small mammal use of croplands.

Research efforts should also be directed towards determining species preference for no-till cropland versus conventionally tilled cropland because the exposure of wildlife to the large quantities of pesticides routinely used in conservation tillage fields may pose a potentially serious problem. Although information is generally lacking, it is believed that, at least for corn and soybean, no-tillage fields have higher bird densities and are used by a greater diversity of birds during the breeding season than are fields with less crop residue (Warburton and Klimstra 1984, Castrale 1985, Wooley *et al.* 1985, Best 1986). At present, as much as a third of the corn and soybean acreage in the U.S.A. and a sixth in Canada are under conservation tillage (reduced till to no-till). Based on economic advantages and improved

DISCUSSION

Les renseignements que nous présentons peuvent servir à la conception d'études de terrain pour l'évaluation des répercussions des pesticides et pour l'élaboration de scénarios de l'exposition des oiseaux dans les habitats agricoles de l'écozone ainsi que dans d'autres régions du Canada où les données sont écologiquement pertinentes. Limitées dans leur nature, leur quantité et leur qualité, ces données ne peuvent que fournir une première approximation de l'utilisation effective des habitats par les oiseaux.

Des études supplémentaires sont nécessaires sur la configuration spatiale des habitats agricoles de l'écozone et sur l'utilisation de ces habitats par la faune (particulièrement des cultures légumières et fruitières ainsi que des habitats non cultivés, contigus aux champs) afin d'améliorer notre évaluation des répercussions possibles des pesticides sur les oiseaux et les autres espèces fauniques. Le SCF a entrepris des travaux en Ontario et en Saskatchewan pour obtenir d'autres données sur l'utilisation de certaines cultures et des habitats non cultivés contigus par les oiseaux de ces régions. Même si le rapport porte surtout sur l'utilisation des habitats agricoles par les oiseaux, les auteurs suivants fournissent des renseignements fiables sur leur utilisation par les petits mammifères : Wegner (1976); Yahner (1983a); Warburton et Klimstra (1984); Benson *et al.* (1985); Castrale (1986); Getz et Brightly (1986). Castrale (1986), notamment, donne plusieurs références supplémentaires sur l'utilisation des zones cultivées par les petits mammifères.

La recherche devrait s'orienter vers la détermination des préférences des espèces pour les zones d'ensemencement direct, relativement aux champs cultivés de la façon traditionnelle, parce que l'exposition aux fortes quantités de pesticides utilisés systématiquement dans les champs où l'on pratique des méthodes culturales de conservation du sol est susceptible de causer des problèmes graves. Même si les

technology, some form of conservation tillage is predicted to be used on 60% of croplands in the U.S.A. by 2010 (Castrale 1985). It is unlikely that the use of conservation tillage methods in Canada will reach the proportions used in the U.S.A. because (1) there is a lack of cost compliance measures in Canada compared to the U.S.A. where farmers must demonstrate use of conservation measures before they can receive financial assistance, and (2) conservation tillage is used more for cash crops than other crops and there is a lower acreage of cash crops grown in Canada. However, use of conservation tillage methods in Canada are still of concern in that little is currently known of either the immediate or long-term effects on wildlife using fields subject to various forms of conservation tillage (Balcomb *et al.* 1984, Wooley *et al.* 1985).

The potential exposure of wildlife to agricultural pesticides may also be affected by landscape patterns such as availability of cultivated versus uncultivated habitat (McNeil *et al.* 1976, Reed *et al.* 1977, Yahner 1983b, Fischl and Caccamise 1985, Clark and Weatherhead 1986, Clark *et al.* 1986), distance from croplands to uncultivated areas (Yahner 1983b), availability of cover for nesting (Basore *et al.* 1986), or availability of food resources such as invertebrates, waste grain, weed seeds and small mammals (Reed *et al.* 1977, Johnson and Caslick 1982). Some authors have suggested that bird densities in crops, such as corn and soybean, represent sink populations of bird species, the extent of which depends on the proximity and condition of the source populations (Rodenhouse and Best 1983, Best 1986). Wooley *et al.* (1985) conclude that future research on the effects of agricultural practices on wildlife should emphasize long-term approaches in which treatments are closely replicated and in which the influence of proximal habitat is thoroughly evaluated.

Bird use of farmland habitats not exposed to agricultural pesticides needs to be investigated in order to assess ecological side-effects of these chemicals (Potts 1984). A recent study in

renseignements sont généralement lacunaires, on croit que, du moins en culture du maïs et du soja, les champs ensemencés de façon directe sont fréquentés par un nombre plus grand d'oiseaux et hébergent une plus grande variété d'espèces durant la période de reproduction que les champs où il subsiste moins de résidus de culture (Warburton et Klimstra, 1984; Castrale, 1985; Wooley *et al.*, 1985; Best, 1986). Actuellement, les méthodes culturales de conservation du sol (travail réduit du sol à ensemencement direct) sont appliquées sur le tiers de la superficie cultivée en maïs et en soja aux États-Unis et sur le sixième au Canada. À la lumière des avantages économiques et du progrès technique procurés par ces méthodes, on prévoit que, d'ici 2010, 60 % de la superficie cultivée aux États-Unis sera soumise à un régime de conservation des sols (Castrale, 1985). Ces méthodes ne connaîtront vraisemblablement pas cette vogue au Canada, parce que (1) aucune mesure pécuniaire n'incite les agriculteurs à les adopter au Canada, tandis que les agriculteurs américains doivent prouver qu'ils appliquent des mesures de conservation avant de bénéficier d'une aide financière; (2) les pratiques de conservation du sol sont davantage utilisées dans les cultures industrielles que dans les autres cultures et, au Canada, la superficie consacrée aux premières est moins grande. Toutefois, le recours aux méthodes de conservation du sol au Canada reste préoccupant en ce que l'on en sait peu sur leurs effets immédiats ou à long terme sur la faune des champs (Balcomb *et al.*, 1984; Wooley *et al.*, 1985).

L'exposition potentielle de la faune aux pesticides agricoles peut également subir l'influence du paysage : proportion de l'habitat cultivé et de l'habitat non cultivé (McNeil *et al.*, 1976; Reed *et al.*, 1977; Yahner, 1983b; Fischl et Caccamise, 1985; Clark and Weatherhead, 1986; Clark *et al.*, 1986); distance entre les champs cultivés et les zones non cultivées (Yahner, 1983b); présence d'un couvert pour la nidification (Basore *et al.*, 1986); disponibilité des ressources alimentaires telles qu'invertébrés, résidus de céréales, graines de mauvaises herbes

Denmark investigated the effects of modern agricultural practices, particularly pesticide use, by comparing the bird fauna in conventionally and organically farmed areas (Brae *et al.* 1988). In general, the number of species was similar on organic and conventional farms but organic farms supported more individuals per species. Fifteen of 35 species showed decreasing numbers with increasing use of pesticides, and only one species showed the reverse trend. Thirteen of these 15 species were significantly more numerous in organically farmed areas. The authors contend that these differences reflect reduced availability of food for birds on conventional farms, rather than acute toxic impacts. Their findings will be used to assess the effect of a 50% reduction in pesticide use in Denmark in the next decade.

Pesticide use is only one of a number of modern agricultural practices which can impact farmland wildlife and their habitats. Wildlife conservation strategies such as the Prairie Conservation Action Plan and the North American Waterfowl Management Plan have recognized that the future of wildlife in Canadian farmland will depend on the interspersion and conservation of adequate areas of unfarmed habitat, as well as on ensuring that adverse effects of agricultural practices, such as the use of pesticides and chemical fertilizers, in the surrounding landscape are minimized (Davis 1967, Moore 1977, Mellanby 1981, Jenkins 1984, Johnston 1984, Roberts and Roberts 1984, Environment Canada 1986, O'Connor and Shrubb 1986, Statistics Canada 1986, Wilcove *et al.* 1986, Sheehan *et al.* 1987).

et petits mammifères (Reed *et al.*, 1977; Johnson et Caslick, 1982). Certains auteurs ont laissé entendre que la densité des effectifs dans des cultures telles que le maïs et le soja représente des populations attirées d'ailleurs, et que ces effectifs dépendent de la proximité et de la santé des populations d'origine (Rodenhouse et Best, 1983; Best 1986). Wooley *et al.* (1985) concluent que la recherche sur les effets des pratiques agricoles sur la faune devrait dorénavant insister sur les travaux à long terme au cours desquels les traitements sont fidèlement reproduits et l'influence de l'habitat rapproché est évalué en profondeur.

L'utilisation, par les oiseaux, des habitats agricoles non exposés aux pesticides agricoles a besoin d'être étudié afin d'évaluer les répercussions écologiques de ces produits (Potts, 1984). Dernièrement, au Danemark, on a examiné les effets des pratiques agricoles modernes, notamment de l'emploi des pesticides, en comparant l'avifaune de régions d'agriculture classique et d'agriculture organique (Brae *et al.*, 1988). En général, le nombre d'espèces était semblable dans les deux types d'exploitation, mais on a trouvé un plus grand nombre d'oiseaux par espèce en agriculture organique. Les effectifs de 15 espèces sur 35 ont baissé alors qu'augmentait l'utilisation des pesticides, et le phénomène inverse n'a été observé que chez une espèce. Sur 15 des espèces, 13 étaient considérablement plus nombreuses dans les régions cultivées selon les méthodes organiques. Selon les auteurs, ces écarts traduisent la disponibilité moins grande de nourriture pour les oiseaux sur les exploitations classiques plutôt que le résultat d'effets toxiques aigus. Leurs conclusions serviront à évaluer l'effet d'une réduction à 50 % de l'emploi des pesticides au Danemark au cours de la prochaine décennie.

L'emploi des pesticides n'est que l'une parmi tant d'autres des pratiques agricoles modernes qui peuvent influer sur la faune des régions agricoles et sur son habitat. Les stratégies de conservation de la faune telles que le plan d'action pour la conservation dans la

Prairie et le Plan nord-américain de gestion de la sauvagine ont reconnu que l'avenir de la faune sur le territoire agricole canadien dépendra de la dissémination et de la conservation de zones non exploitées dans ce territoire de même que de la réduction au minimum des effets nuisibles des pratiques agricoles telles que l'emploi des pesticides et des engrais chimiques dans le paysage qui l'entoure (Davis, 1967; Moore, 1977; Mellanby, 1981; Jenkins, 1984; Johnston, 1984; Roberts et Roberts, 1984; Environment Canada, 1986; O'Connor et Shrubb, 1986; Statistics Canada, 1986; Wilcove *et al.*, 1986; Sheehan *et al.*, 1987).

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APPENDIX 1/ ANNEXE 1

Annotated bibliography

Bibliographie annotée

Armstrong, E.R. and D.L.G. Noakes. 1981. Food habits of Mourning Doves in southern Ontario. J. Wildl. Manage., 45(1):222-227.

LOCATION: Norfolk County, Ontario.

OBJECTIVE: To quantitatively determine food habits of Mourning Doves.

METHODS: From May 1974 to March 1976 Mourning Doves collected by shooting and mist-netting. Collections concentrated at feeding and roosting time. Samples used for stomach analysis. Area consisted of 102,000 ha of farmland (improved): grain (34%), tobacco (32%), and winter wheat (16%). Qualitative observations of feeding behavior recorded during field work.

RESULTS: Corn consumed throughout the year; major food during winter. Wheat major food during summer months. Stomach contents and field observation indicated Mourning Doves relied heavily on agricultural crops, particularly corn. Wheat consumed in measureable quanities during much of year but mostly in July and Aug. immediately after winter wheat harvest, (waste corn and wheat important summer foods particularly for hatching birds). Mourning Doves concentrated in hundreds in some harvested fields. Most weed seed species common in corn fields and may have been consumed same time as corn (Apr.-Sept.).

AGROHAB values obtained from Table 1.

HABITATS: Buckwheat, corn, rye and wheat-winter.

Ashton, A.D. and W.B. Jackson. 1983. Hazards to wildlife in corn fields treated with Temik. Proc. Ninth Bird Control Seminar, Bowling Green State Univ., Bowling Green, Ohio, pp. 285-292.

LOCATION: Blissfield, Michigan.

OBJECTIVE: To document effects of application of Temik to corn fields on wildlife.

METHODS: Field trial conducted 7 May-14 June 1983. Consisted of 4 treated plots and 2 reference plots; plots ranged from 15 to 47 acres. Bird census included 10-minute observation period at one corner of each field followed by a perimeter walk and random transect surveys. Bird numbers, species and carcass recoveries for birds and mammals recorded on each perimeter/transect walk. Also mapped territorial (singing) males in field border areas during the walk. Pretreatment observation and carcass recovery conducted for at least 3 days on each field. Comparable observations for 1st week post-planting and every other day in 2nd week. Temik 15G applied at rate 1.5 ai/A in 7 inch band and incorporated at planting. Particular attention paid to spills. 6 plots studied, each having different composition of habitats i.e. various crops bordered by other fields, ditches, shrubs, woodlots, etc.

RESULTS: 93 species of birds identified during study. Avian observations focused on resident birds, especially involving the census of singing males. In-field bird populations changed drastically when fields prepared for

planting, some species increasing, others decreasing. Shifts due to habitat changes had no relation to chemical treatment. Numbers of birds observed remained constant or increased in test fields during observation period. Authors claim that seasonal and habitat changes had impact on data interpretation. No bird mortality found.

AGROHAB values obtained from Figures 1-6.

HABITATS: Corn, ditches, oats, potaoes, rivers, soybeans, tomatoes, wheat, and woodlots.

Askins, R.A. and M.J. Philbrick. 1987. Effect of changes in regional forest abundance on the decline and recovery of a forest bird community. Wilson Bull., 99(1):7-21.

LOCATION: New London, Connecticut.

OBJECTIVE: To monitor bird populations over time for a given 23.1 ha tract of forest, and explain changes in the total abundance and number of species of long distance migrants present.

METHODS: Bird populations estimated using spot-mapping technique. Population estimates from 1982-85 based on 10 censuses each year 10 May-8 July, 0500-0800 EDT. Similar coverage 1953-1976, with slightly less effort on the first two censuses. Total of 11 census 1953-85. Determined changes in total area of forest within two km of the centre of the hemlock-hardwood study area from aerial photographs. For these purposes forest defined as vegetation with a closed canopy of trees. Multiple regression analysis used to determine which variables were the best predictors of population change. Defined and analysed following species groups separately: forest interior species, interior-edge species, edge species, long distance migrants, short distance migrants and permanent residents.

RESULTS: Abundance of long distance migrants negatively related to abundance of birds characteristic of suburban habitats, and positively related to area of forest within 2 km. Decline of long distance migrants prior to 1976 occurred when suburban birds increased and nearby forest decreased. Increase after 1976 best explained by reforestation in surrounding area as suburban birds still increasing. Many long distance migrants established in reforested area. Immigration from nearby forests important in maintaining abundance of long distance migrants as populations part of larger regional population.

AGROHAB values obtained from Table 1.

HABITATS: Woodlots.

Balcomb, R., C.A. Bowen and D. Wright. 1984. Effects on wildlife of at-planting applications of granular carbofuran. J. Wildl. Manage., 48(4):1353-1359.

LOCATION: Frederick County, Maryland.

OBJECTIVE: To determine effects of at-planting applications of granular carbofuran on wildlife.

METHODS: Fieldwork conducted 22 April-16 May. 15 fields totaling 195 ha selected for study. Fields interspersed with woodlots, hedgerows, fallow fields, turf and roads. Area bisected by a stream. Furadan applied at planting at rate of 1.12 kg of active ingredient/ha to control rootworm. Planting methods included plowing and discing soil surface prior to planting and no-till technique. Atrazine and metolachlor applied to plowed fields within a few hours of planting. Paraquat was applied to no-till areas. Effects on wildlife were investigated by systematic field searches.

RESULTS: Field searches within 96 h of treatment revealed 6 dead songbirds, 5 of which contained residues of carbofuran. American Robin and Mallard observed exhibiting symptoms of carbofuran poisoning. Common Grackles shot and tested for carbofuran. Pesticide detected in 10 of 12 shot. "Given extensive use of carbofuran in USA numerous wildlife mortalities are likely".

AGROHAB values obtained from Table 1 and pp. 1355-1356.

Habitats: Corn.

Balcomb, R. 1983. Secondary poisoning of Red-shouldered Hawks with carbofuran. J. Wildl. Manage., 47(4):1129-1132.

LOCATION: Beltsville, Maryland.

SUMMARY: Reports on the discovery of 2 Red-shouldered Hawks poisoned by feeding on small vertebrates in a cornfield treated the previous day with Furadan 10 granules (10% carbofuran). Applied at planting in the seed furrow (1.12 kg active ingredient/ha). Also gives chemical analyses of selected birds and mice found dead in carbofuran treated cornfields.

AGROHAB values obtained from text.

HABITATS: Corn.

Basore, N.S., L.B. Best, and J.B. Wooley. 1986. Bird nesting in Iowa no-tillage and tillage cropland. J. Wildl. Manage., 50(1):19-28.

LOCATION: Adair County, Iowa.

OBJECTIVE: To examine the influence of cultivation practices (tillage or no-tillage) on bird nesting.

METHODS: Study conducted over 3 year period (1982-84). Corn planting dates: 24 May 1982, 9 May 1983, 13 May 1984. Soybeans planted 3 weeks later. Crops cultivated 3-9 weeks after planting. Habitats searched twice each year from mid-May through July. Each crop row searched until field completely traversed. Recorded: distance of nest to nearest strip cover, crop residue coverage and height, nest concealment, weed coverage and vegetation height and density. Strip cover searched for nests when associated fields searched. Only strip cover nests in herbaceous vegetation and on ground considered.

RESULTS: Nest initiation peaked during 2nd week in June and continued through July. Killdeer, Ring-necked Pheasant, and Western Meadowlark initiated nests first 2 weeks of May. Mourning Dove and Vesper Sparrow initiated nests in July. Horned Lark observed and known to nest in row crop fields, but because it bred early, nests were not encountered during searches.

AGROHAB values derived from Table 3.

HABITATS: Corn, corn no-till corn, corn no-till sod, soybean no-till corn, strip cover.

Bedard, J., A. Nadeau and G. Gauthier. 1986. Effects of spring migrating Greater Snow Geese on hay production. J. Appl. Ecol., 23:65-75.

LOCATION: Montmagny, Quebec.

OBJECTIVE: To determine the effect of migrating Greater Snow Geese on hay production.

METHODS: Study conducted 1 Apr.-19 May 1980 at traditional staging grounds for 7000 Greater Snow geese. Use 150 ha tidal marsh, and adjacent agricultural land. Census by ground and air throughout staging period. Agricultural practices include: 4-6 year cycle beginning with small-grain cereal (oats or barley) as a cover crop which is sown in late May along with mixture of timothy, clover, and/or alfalfa. Hay becomes established the following spring at which time it is referred to as a new hayfield. New hay area totalled 38 ha. Hay fields on average remained productive for 3-5 years. Old hayfield (133 ha) consists of productive fields with regular harvests as well as abandoned weed-invaded hayfields (36 ha) not harvested for 3 years or more. Freshly tilled land covered 57 ha, and pastured plots covered 6 ha. Greater Snow geese usage monitored by dropping counts at 4 day intervals (10 censuses between 13 Apr and 18 May) in each of 51 sampling stations randomly located in two major habitat types: first year, or new hayfields (16) and older hayfields (35). Measurements after Greater Snow Goose departure included height of grass stems and total harvestable biomass. All statistical analyses carried out using SPSS.

RESULTS: Field feeding followed bimodal pattern. Greater Snow Geese did not visit freshly tilled fields and avoided pastures and long-abandoned fields with weeds and shrubs. Average number of faeces in new hayfield compared to old hayfield was not significantly different. Differences within months ranged from F1 Apr 13, F3 Apr 23, F2 Apr 28 and May 2, F3 May 6 and F2 May 10, 14, 18.

AGROHAB values derived from figure 4.

HABITATS: Hay.

Blake, J.G. and J.R. Karr. 1984. Species composition of bird communities and the conservation benefit of large versus small forests. Biol. Conservation, 30:173-187.

LOCATION: central Illinois.

OBJECTIVE: To examine the benefit of two small reserves relative to a single large reserve.

METHODS: Used data collected from 12 forest patches ranging in size from 1.8 to 600 hectares. Areas censused using breeding bird survey technique summers of 1979 and 1980.

RESULTS: Two reserves likely to support a higher number of species. Long distance migrants and forest interior species poorly represented in small forests. Single large reserve more likely to support greater species totals. Forest-bird species tabulated by presence/absence in each woodlot for 1979 and 1980.

AGROHAB values derived from Tables 1 and 2. Information extracted for woodlots <100 ha (10).

HABITATS: Woodlots.

Blokpoel, H. and J. Struger. 1987. Cherry depradation by ring-billed gulls in the Niagara Peninsula, Ontario. Canadian Field Naturalist, In Press.

LOCATION: Niagara Peninsula, Ontario.

OBJECTIVE: To report on the feeding behaviour of Ring-billed Gulls and estimate the potential economic impact of their behaviour.

METHODS: Records of Ring-billed Gulls feeding on cherries obtained from interviews with people who had observed their activities in orchards. Main observations summarized in Table 1. Estimated number of cherry pits at 6 colonies converted to economic loss in Table 2.

RESULTS: Ring-billed Gulls foraged from branches and ground. Both sour and sweet cherries consumed but reports suggested a preference for sweet. Small numbers of regurgitated pits of plums and peaches recorded at colony sites. Also reports of Ring-billed Gulls potentially feeding on pears and grapes.

AGROHAB values obtained from text.

HABITATS: Cherries, peaches and plums.

Bollengier, R.M., J.L. Guarino and C.P. Stone. 1973. Aerially applied methiocarb spray for protecting wild lowbush blueberries from birds. Proc. Sixth Bird Control Seminar, Bowling Green State Univ., Bowling Green, Ohio, pp. 216-220.

LOCATION: Laconia, New Hampshire.

OBJECTIVE: Performed trials to determine if methiocarb would protect wild, lowbush blueberries from bird damage.

METHODS: Tests conducted 17 July-16 Aug. 1972 at three sites. Effectiveness of the treatment was determined by calculating differences in bird damage in treated and untreated plots. Recorded number and species of birds that visited all plots during a total of 26 one hour observation periods. Counts were conducted in each plot along a permanent line transect containing fixed points that provided cover for an observer.

RESULTS: Differences in damage between treated and untreated plots at the three sites were evident. After two weeks there was a 49.7% reduction, after one month 36.2%. Of a total of 27 species of birds observed visiting the test plots, 12 were seen eating berries. American Robin and European Starling visits accounted for over half the total number. Overall there were seven times more visits to untreated than treated plots.

AGROHAB values derived from Table 2.

HABITATS: Blueberries.

Brown, R.B.G.. 1974. Bird damage to fruit crops in the Niagara Penninsula. Canadian Wildlife Service, Report Series Number 27, 57 pp..

LOCATION: southern Ontario (Niagara Penninsula).

OBJECTIVE: To 1) describe the extent of damage to different fruits, 2) identify the birds which are mainly responsible for this and the breeding populations to which they belong, 3) investigate the importance of colour and other factors in stimulating birds to eat fruit, 4) examine the relative importance of fruit in the diet and the influence of foraging behaviour, and finally, 5) determine the most effective way to deal with each problem species.

METHODS: Information as to the various methods used to accomplish these objectives is available at the beginning of each section.

RESULTS: Presented largely in text with supporting figures, section by section. Cherries and grapes are the fruits suffering the most damage. Amount varies but 25% loss of sweet cherry crop is not uncommon. Grape damage usually less than 10%. Sweet cherries are taken mainly by American Robins, Common Grackles and European Starlings. Grapes are mainly taken by American Robins but also Northern Orioles. A large proportion of damage is done by local juveniles (robins, starlings). Both robins and starlings prefer the reddest cherry and the blackest grape available to them. Preference however is relative. Various protective approaches discussed.

AGROHAB values obtained from Table 11a and text.

HABITATS: Apples, cherries, grapes, mulberries and peaches.

Caldwell, L.D. 1986. Predatory behavior and tillage operations. Condor, 88:93-94.

LOCATION: central Michigan.

OBJECTIVE: To document an association between avian predators and farm machinery and to provide new data on hunting success of predators that forage around working farm machinery.

METHODS: Relative abundance of predators and prey recorded by summing number of sightings of each and relating sightings to daylight hours spent preparing a field for planting.

RESULTS: Avian predtors, as well as prey, observed most frequently during early phases of tillage (ploughing and discing). 850 hours spent at preplanting tillage: 104 mouse-sized mammals observed, predominantly deer mice (Peromyscus maniculatus) followed by meadow mice (Microtus pennsylvanicus) and short-tailed shrews (Blarina brevicauda). 54 observations of successful prey capture by American Kestrel, 1 by Red-tailed Hawk, and 2 by Loggerhead Shrike as they hunted from borders of fields under tillage. American Kestrel observed twice perching and watching bare field ready for planting. Prey rarely seen during latter stages of seed bed preparation due to lack of suitable habitat. Most successful effort occurred in October in discing of a spring-ploughed hayfield.

AGROHAB values obtained from text.

Habitats: Fields-Tilled.

Castrale, J. 1986. Impacts of conservation tillage on farmland wildlife in southeastern Indiana. Indiana Department of Natural Resources, Statewide Wildlife Research, Project No. W-26-R-18.

LOCATION: Scott County, Indiana.

OBJECTIVE: To investigate the impact of conservation tillage on wildlife.

METHODS: Corn primary crop in area with 55% of acreage, followed by soybeans (26%). Winter fields classified into 3 categories (corn residue, soybean residue, and tilled) of 13 fields each. Corn residue planted to corn previous summer and residues left unchopped after fall harvest. Summer fields categorized as conventionally tilled corn, conventionally tilled soybeans, no-till corn, or no-till soybeans. Winter fields were studied in Jan. and Feb. of 1983 and 1984 and summer fields in Jun. and Jul. 1983 and 1984. Summer sampling began 13-74 days (mean = 37 days) after planting. Birds surveyed by walking circuitous route in each field 10 days each seasonal period and recording number and species encountered.

RESULTS: No-till row-crop fields offer improved habitat conditions for birds compared to conventionally tilled fields. But these improved conditions are considerably inferior to other habitats not row-cropped. Notes that Barn Swallows forage over no-till fields perhaps because populations of aerial insects are greater. Mourning Doves feed extensively on waste grains and seeds; corn and wheat being favored over soybeans. Killdeer and Horned Lark only species that nest frequently in extensively cultivated row-crop fields. Red-winged Blackbird, Eastern Meadowlark, Field Sparrow, Song Sparrow, and Indigo Bunting known to nest on ground and may nest in no-till fields. Occurrence of these in conventionally tilled fields reflects foraging activity, and for most species use is near field borders. Notes that the extent food plays in limiting wildlife abundance and use of cultivated fields is not well known. As a food source corn and wheat are generally preferred over soybeans. Mourning Dove use of fields is partially explained by preference for corn and wheat. Vegetation structure may play a more important role than food. Lack of cover or suitable vegetation characteristics may prevent some species from utilizing some food sources present. Condition of the field at planting is more important than the crop that is to be no-tilled into it. Horned Lark may nest before most field activities. Most other species nest during planting and post-planting operations.

The mean number of bird species using corn residue fields (winter) was almost twice that of soybean residue fields. Overall frequency of occurrence of birds was nearly twice as great for corn residue fields than other tillage categories. Frequent use of corn residue fields probably due to greater amounts of crop residues and presumably food amounts. Primary use of fields was for feeding. Ground roosting by Killdeer, Mourning Dove, Horned Lark and Eastern Meadowlark probably occurred.

AGROHAB values obtained from Tables 4 and 6.

HABITATS: Corn, corn-notill, fields-tilled, soybean and soybean-notill.

Colvin, B.A. 1985. Common Barn-owl population decline in Ohio and the relationship to agricultural trends. J. Field Ornithol., 56(3):224-235.

LOCATION: Ohio.

OBJECTIVE: To investigate the relationship between the decline of the Common Barn-owl in Ohio and agricultural practices.

METHODS: Common Barn-owl observations over 50 year period compared to agricultural variables for same period. Agriculural data reported as annual estimates only.

RESULTS: Agricultural changes in Ohio over 50 year period resulted in less favorable Common Barn-owl habitat. Relationship does not exist between agricultural variables that reflect availability of grasslands and owl population decline. Developing agriculture originally facilitated their spread into Ohio, and other changes in agriculture appear to have subsequently forced its decline. Common Barn-owl decline believed to be effected principally through loss of foraging habitat (i.e. grasslands).

They consume mostly small mammal prey from grasslands, rather than from woodlands or crop fields, and therefore less subject to contamination from organochlorine insecticides than raptors which interact with insect, bird, or aquatic food chains and habitats of high pesticide use.

No information on seasonal distribution or intensity of foraging activity. Several references on feeding behavior.

AGROHAB values obtained from text.

HABITATS: Grasslands.

Conover, M.R. 1982. Behavioral techniques to reduce bird damage to blueberries: Methiocarb and hawk-kite predator model. Wildl. Soc. Bull., 10:211-216.

LOCATION: Hamden, Connecticut.

OBJECTIVE: To demonstrate the usefulness of two behavioural techniques (fear-producing stimuli and aversive conditioning) for reducing bird damage to blueberries.

METHODS: Study conducted during 1980 and 1981 on 2 Connecticut farms. Berries ripened from Jul. to Sept.. Percent berry-loss and mean number of bird visits/h were determined at each plot during each of three weekly periods. During one week methiocarb was sprayed over the entire plot, (rate of 2.8 kg/ha), during another the hawk-kite was flown, and during the third the plot was left unprotected. The order of the tests was randomized. The weekly berry-lossses in these series were also compared with simultaneous losses in nearby netted plots. Birds counted during 15-minute observation periods irregularly spaced between 0700-1600 (EDT).

RESULTS: Birds consumed 52-76% of the unprotected blueberries during 1980 and 1981. In 1980 methiocarb reduced berry-loss by 81%, which was more than either the hawk-kite (34%) or netting (47%). In 1981 however both hawk-kite and netting were more successful.

AGROHAB values derived from Table 2. Conversion made from number of birds/h/0.05 ha to number of birds/h/ha. Values from control test at Lockwood farm used.

HABITATS: Blueberries.

Conover, M.R. 1985. Protecting vegetables from crows using an animated crow-killing owl model. J. Wildl. Manage., 49(3):643-645.

LOCATION: Hamden, Connecticut.

OBJECTIVE: To test whether an animated model of an owl grasping a crow would protect small garden plots from crows more effectively than other commonly used models.

METHODS: Tests performed on three different predatory models during 1981-1982. 1981 tomatoes planted in 3, 10 by 20 plots; 1982 tomatoes and cantaloupes in 4, 10 by 20 plots. 30 ripening cantaloupes and 60 ripening tomatoes always available in each plot. Crow damage assessed at 2 to 4 day intervals by counting fruit punctured or eaten by crows.

RESULTS: In different control plots, American Crow damaged an average of 5.4 tomatoes and 1.3 cantaloupes during each trial period i.e. 18% ripe tomatoes and 4% of the cantaloupes. Crow damage in plots with the crow-killing owl model was 81% lower than in plots with the non-animated owl model.

AGROHAB values obtained from Table 1 control values.

HABITATS: Cantaloupes and tomatoes.

Conover, M.R.. 1988. Effect of grazing by Canada geese on the winter growth of rye. J. Wildl. Manage., 52(1):76-80.

LOCATION: Orange and Guilford, Connecticut.

OBJECTIVE: To document whether winter grazing by Canada geese had an adverse impact on rye.

METHODS: Tests conducted 1983-84, 1984-85 on a total of 13 fields. All fields had a rye cover crop, a history of goose grazing during the previous winter, and were not open to hunting. To assess use of fields a square plot (930-1185 m-2) was randomly established, >40 m from field edge, in each field. Fecal matter of goose, rabbit and white-tailed deer were counted 4 times Dec. to Feb.. Number of geese present in fields was counted 9-11 times Nov. to Mar.. Fields without geese were excluded from analysis. A 4 m-2 exclosure was placed in each field. The wire mesh did not exclude small mammals. The biomass of rye inside the exclosure was compared to an unfenced site in the same field. Also perfomed simulated goose grazing experiments to examine the relationship between the timing and intensity of grazing or. rye plants.

RESULTS: No herbivores other than geese observed in the fields and no rabbit or deer feces found in plots. By late Jan. rye leaf biomass inside the exclosures was 89.9 g/m-2 and 16.8 g/m-2 in the grazed plots ($F=11.50$; 1,10 df; $p=0.007$). A single clipping had an effect on the plant's leaf, root and crown biomass. Multiple clippings resulted in lower growth rates than those receiving only one clipping.

AGROHAB values obtained from p. 77.

HABITATS: Rye.

Dolbeer, R.A., C.R. Ingram and A.R. Stickley Jr. 1973. A field test of methiocarb efficacy in reducing bird damage to Michigan blueberries. Proc. Sixth Bird Control Seminar, Bowling Green State Univ., Bowling Green, Ohio, pp. 28-40.

LOCATION: Ottawa County, Michigan.

OBJECTIVE: Primarily to determine efficacy of methiocarb as a bird repellant when applied under conditions required for registration as an insecticide (ie. without sticker, at a rate of 1 lb. active ingredient per 25 gal., spray at 50 gal./acre, with a 14 day delay between application and harvest). Secondary objective was to obtain information on the species and behaviour of birds feeding on blueberries.

METHODS: Bird observations conducted 6-11 and 13-16 Aug.. Recorded number of birds of each species entering plantings at both Test Site (8 hr/day) and Off Site (7 hr/day).

RESULTS: Methiocarb efficacy: no significant difference ($p>0.01$) in loss rates between treated and untreated plots. Estimated losses were 7.2 and 9.5% in treated and untreated plots respectively. American Robins, European Starlings, and Common Grackles (in that order) most common depredators. Loss caused by other 11 species obsereved feeding considered 'minor' in comparison.

AGROHAB results derived from Table 2.

HABITATS: Blueberries.

Dolbeer, R.A., A.R. Stickley Jr. and P.P. Woronecki. 1978/79. Starling, <u>Sturnus vulgaris</u>, damage to sprouting wheat in Tennessee and Kentucky, U.S.A., Protection Ecology, 11(3):159-69.

LOCATION: northwest Tennessee, southcentral Tennessee, and southcentral Kentucky.

OBJECTIVE: To estimate the amount of bird damage to sprouting wheat and examine characteristics of fields receiving damage so that the problem could be put into proper economic perspective and eventually to formulate management recommendations to eleviate the problem.

METHODS: Established two survey routes along secondary roads in each region. One intensive, located in a single county where at least one million roosting blackbirds and starlings foraged the previous winter, and one extensive which crossed several counties. Routes were traveled 4 or 5 times 1 Nov.-5 Mar.. Damage assessed in each field by counting the number of wheat sprouts: unprobed, probed but viable, bird-destroyed, or freeze destroyed in each of 10 randomly placed 0.31 m-2 plots. New plots used for each assessment. Survey did not consider loss due to germination failure.

RESULTS: Survey routes crossed within the 50 km foraging radius for birds inhabiting 12 roosts containg >1 million birds each. No significant difference in percentage of sprouts destroyed between intensive and extensive routes, therefore lumped for analyses. Of the 218 fields surveyed, 91% had

5% or less loss and 4% (all in northwest Tenn.) had >10% loss. Freeze-thaw heaving destroyed ~4.4% of sprouts in northwest Tenn., ~2.0% in southcentral Ken. and ~34.9% in southcentral Tenn..

AGROHAB values obtained from pages 161-63.

HABITATS: Wheat-winter.

Fischl, J. and D.F. Caccamise. 1985. Influence of habitat and season on foraging flock composition in the European Starling (Sturnus vulgaris). Oecologica, 67:532-539.

LOCATION: central New Jersey.

OBJECTIVE: To examine relative importance of habitat and season in determining size and composition of foraging flocks of European Starling.

METHODS: Study area of 960 sq. km delineated by connecting 6 outermost major roosts. Flock characteristics (flock size, species composition, activity and habitat) evaluated by roadside census performed at approximately 9 day intervals from Oct. 1979-Feb. 1981. The census route (187 km) was randomly established within the study area and had sample plots every 3.2 km (total 58). Data reported only for birds actively feeding. Annual cycle of European Starling divided into 6 seasonal periods: Spring Migration (Feb.-Apr.), Breeding (Apr.-Jun.), Post-breeding Development (Jun.-Aug.), Post-breeding Decline (Aug.-Nov.), Fall Migration (Nov.) & Winter (Nov.-Feb.). Decline represents time from initiation to peak of roosting population, and development is time from peak to fall migration. Decline, Fall Migration and Winter periods studied in two different years (1979 and 1980). Other three periods were studied in 1980 only.

RESULTS: Although flock size was influenced by both season and habitat it varied relatively less within seasons (across habitats). E* is the Relativized Electivity Index based on O'Neill's selectivity coefficient Wi (O'Neill, 1969). Values approach +1 when habitats are used in proportions greater than their abundance, and -1 when habitats used less than would be expected based on their abundance.

AGROHAB values derived from Figure 3. Habitat preference calculated only for habitats where European Starling observed feeding more than once.

HABITATS: Apple, alfalfa & timothy, corn, fallow, feedlots, marshes, old fields, pastures, soybeans, and urban.

Flegler, E.J., H.H. Prince and W.C. Johnson. 1987. Effects of grazing by Canada geese on winter wheat yield. Wildl. Soc. Bull., 15:402-405.

LOCATION: Kalamazoo County, Michigan.

OBJECTIVE: To detemine effect of grazing by Canada geese on wheat at various stages of growth, on wheat yield and its component parts (mg/kernel, kernels/head, and heads/1-m row)

METHODS: Stages of growth for grazing treatments were: preemergence, young wheat (5 cm), dormant wheat (early Dec.) and spring wheat. Corresponding classifications for the treatments were based on Feekes scales. Each grazing treatment was replicated 15 times on 1.0 X 4.9-m plots. A replication consisted of grazing two Canada geese in a covered welded wire pen enclosing each plot. Grazing intensity was defined by height (0.5 cm), rather than hours/unit area.

RESULTS: All treatments except preemergence yielded less wheat than the control ($p<0.01$, Table 1). Mean yield was reduced by 18, 30 and 16% respectively, for young, dormant and spring wheat. Decline in total yield was reflected in stem density and kernel weight.

AGROHAB values obtained from text.

HABITATS: Wheat-winter.

Freemark, K.E. 1984. The species-area pattern of forest birds in an agricultural landscape. Ph.D. Thesis, Carleton University, Ottawa, Ontario, Canada.

LOCATION: eastern Ontario.

OBJECTIVE: To partition the variance in bird species number and compostion between forest area per se and habitat heterogeneity within forests.

METHODS: Used unlimited distance point counts to census birds. Conducted censuses in 21 forests 3-7620 ha in Jun. and Jul. 1979-81.

RESULTS: Species number increased with area. Some ecological classes of bird species were absent in smaller forests. Area per se explained most of the variance in species number in total and for ecological classes. Habitat heterogeneity explained a small amount of the variance in species number and total ecological classes of birds.

AGROHAB values derived from Table 16. Data used from woodlots <100 ha.

HABITATS: Woodlots.

Galli, A.E., C.F. Leck, and R.T.T. Forman. 1976. Avian distribution patterns in forest islands of different sizes in central New Jersey. The Auk, 93:356-364.

LOCATION: central New Jersey.

OBJECTIVE: To determine 1) the relationship between size of habitat patch and bird species richness, 2) forest-size requirements of different bird species, and 3) importance of forest edge and forest interior as distinct zones for birds.

METHODS: Censused 10 woodlots in each of three sections (northern, southern, and central) within the study region. Woodlots ranged in size from 0.01 to 24.0 hectares with each size class represented once in each section. Censuses were carried out from 5 Jun.-8 Aug. 1972. A series of transect lines (30m separation) were marked with surveyors flagging tape. Investigators maintained a prescribed course through the forest on each census, and recorded bird contacts (visual and auditory) within a 15m strip either side of the transect line.

RESULTS: Frequency of occurrence of bird species in eight censuses is tabulated by size of woodlot. Following conclusions drawn: 1) forest size had a significant effect on number of bird species, 2) size of forest had no significant effect on foliage height diversity, therefore bird species richness pattern is likely a result of area itself, 3) bird species richness inceases significantly through island size of 24 ha, 4) woodlots of 0.2 ha contained forest edge birds only, forest interior species began occurring at 0.8 ha, and 5) for land use considerations larger forest tracts are essential to maintain a complete avian community.

AGROHAB values derived from Table 4.

HABITATS: Woodlots.

Gottfried, B.M. and C.C. Franks. 1975. Habitat use and flock activity of Dark-eyed Juncos in winter. Wilson Bull., 87(3):374-383.

LOCATION: McDonough County, Illinois.

OBJECTIVE: To determine habitat use and flock activity of Dark-eyed Juncos in winter.

METHODS: Flocks observed frequently from 13 Oct. to 25 Mar. 1972 on 2 study areas. Birds captured, banded and backtagged. Birds observed for entire days from departure to arrival at roost (total of 440 hours).

RESULTS: During fall migration, large flocks of juncos were usually widely dispersed in harvested soybean fields, often directly in the centre. Mid-winter flocks fed mostly near trees at the edge gradually moving toward centre of the field. Late winter and early spring flocks began flying directly to centre again perhaps because of food depletion near edge. Fed on seeds on ground except when high snow accumulation, then fed on seeds still on plants. General information on other habitats provided in discussion.

AGROHAB values obtained from p. 377.

HABITATS: Pastures and soybeans.

Graber, R.R. and J.W. Graber. 1963. A comparative study of bird populations in Illinois, 1906-1909 and 1956-1958. Illinois Natural History Survey Bulletin, Vol. 28, Article 3, 528 pp..

LOCATION: Illinois.

OBJECTIVE: To present a comparitive quantitative study of bird populations in Illinois, 1906-1909 and 1956-1958, and provide the basis for evaluating the adjustment of birds to a changing environment.

METHODS: Presents a comparison of two state-wide bird population surveys conducted in 1906-09 and 1956-58. Summer census carried out 22 May-15 Jul. and covered 7662 ac in 1906-09 and 6785 ac in 1956-58. Winter studies carried out 1 Dec.-15 Feb. and covered 5299 ac in 1906-07 and 4881 in 1956-58. Censuses were done using the strip census method. In 1956-59 starting points for strip censuses were deliberately chosen in an area that seemed to represent the region. A census strip was walked along the perimeter of a square 1.5 to 2 miles on each side. Habitats were not deliberately chosen but considered as they were encountered along the straight line routes. Supplementary censusing of some habitats was done for those apparently under-represented. Obviously juvenile birds were not included in population calculations.

In 1959 a comparison of the strip-census and breeding bird survey methods was conducted. Though the strip census did not show the population characterisics precisely it did provide a reasonably accurate qualitative picture of the populations.

In the summer avifaunal tables for certain habitats some of the bird species are designated as breeding in those habitats. This designation indicates that the species was found nesting in at least one of the surveys. No indication of nesting intensity is given.

RESULTS: Only data collected in the 1956-58 study are included in the AGROHAB database.

ALFALFA

AGROHAB values obtained from Table 28.

Alfalfa forms cover 1-2 ft. high, similar to red clover, but less dense. First cutting half done by mid-June and completed by early July. Second and third cuttings in Aug. and Sept. Most fields censused had mature stands.

CLOVER-RED

AGROHAB values derived from Table 24.

Red clover forms dense cover 1-2 ft. tall. In central Illinois crop mowed by mid-June. Harvest dates 1-2 weeks later in northern Illinois. High population of birds, exceeding that for pasture and other grassland habitats.

CLOVER-SWEET

AGROHAB values derived from Table 26.

Sweet clover forms dense cover 3-5 ft. or more in height.

CORN

AGROHAB values derived from Tables 5 and 45.

Corn represented 28% of the land censused in summers of 1957-8. Plants in summer census ranged from 3 in. to 2 ft. in height, although some fields with plants over 3 ft. were censused. The dominant feature of habitat in the summer census period was bare ground. Mean number of birds per acre for all census years in three zones in summers varied from 0.3 to 0.9. At least 60 species of birds recorded in summer cornfields. This figure probably reflects large acreage covered (4003 acres) more than the qualilty of the habitat.

HAY-MIXED

AGROHAB values derived from Table 19.

To point out differences in bird populations of various types of hay crops, data on hayfields of mixed grasses and legumes (hay-mixed) were distinquished from those of relatively pure stands of alfalfa, red clover and sweet clover. Hay-mixed is composed of various mixtures of grasses (timothy, brome, and wild grasses), legumes (red clover, sweet clover) and alfalfa. Hay-mixed usually formed a dense cover of 2-3 ft. high at maturity. As bird habitat it was rich in species and very rich in numbers. At least 14 species were found to nest in hay.

OATS

AGROHAB values derived from Table 10.

At the time of the census oat plants had attained nearly full growth (12-18 in.) and were headed out. Fields were green in the early part of the census and ripened before the end of July. Most fields had scattered weeds that produced an aspect more like hayfields than other grain crops, and the avifauna showed some resemblance to that of hayfields.

SOYBEANS

AGROHAB values derived from Tables 7 and 46.

Soybean fields had considerable areas of bare ground at the start of the nesting season. In early June, at the start of censusing, plants less than 6 in. in height reached 12 in. by the end of the summer census.

WHEAT

AGROHAB values derived from Tables 12 and 49.

Wheat plants were 1.5-2 ft. tall, green and headed out at the time of the census. Plants ripened during Jun. and Jul. and were cut in Jul. and Aug.. Wheat fields were found to be relatively poor habitat for birds but supported populations slightly higher than those in corn or beans.

HABITATS: Alfalfa, clover-red, clover-sweet, corn, hay, oats, soybeans, and wheat.

Guarino, J.L., W.F. Shake, and E.W. Schafer Jr.. 1974. Reducing bird damage to ripening cherries with methiocarb. J. Wildl. Manage. 38(2):338-342.

LOCATION: Lannsing and Hartford, Michigan.

OBJECTIVE: To evaluate effectiveness of methiocarb (0.16% spray) in reducing damage to ripening sweet and tart cherries.

METHODS: Studies conducted mid June to early July 1971. Bird censuses made whenever possible on line transects through the study area between daylight and 0900, and between 1500 and dusk.

RESULTS: Treatments resulted in highly significant damage reductions in both sweet and tart cherry orchards. At harvest damage was reduced by 65.6 and 62.2% in the sweet and tart cherry orchards respectively. Pretreatment bird population data are lacking, appeared however that treated and control areas were equally susceptible to bird pressure.

AGROHAB values obtained from pages 341-342.

HABITATS: Cherries.

Guarino, J.L., C.P. Stone and W.F. Shake. 1973. A low-level treatment of the avian repellant, methiocarb, on ripening sweet cherries. Proc. Sixth Bird Control Seminar, Bowling Green State Univ., Bowling Green, Ohio, pp.24-27.

LOCATION: Hartford, Michigan.

OBJECTIVE: Follow-up to test of 1971 (Guarino et al. 1974). Designed to determine the effectiveness of a lower concentration of methiocarb on sweet cherries.

METHODS: Investigations conducted 20 June-6 July 1972. The numbers and species of birds that visited the treated and untreated trees were recorded daily in ore to five hour-long observation periods throughout the day. Census data were converted to number of bird visits per hour by species using square-root transformation, and analysed by one-way analysis of variance. Scheffe's test was used to determine significant differences among means.

RESULTS: The difference in damage between treated and untreated trees (assessed after 6 and 14 sdays) was highly significant ($p<0.005$). Most damage was caused by birds removing entire cherries. Peck damage was three times more common in treated trees. Census data is lumped for visits to treated and untreated trees.

AGROHAB values derived from Table 1.

HABITATS: Cherries.

Hickey, J.L. and L.B. Hunt. 1960. Initial songbird mortality following a Dutch elm disease control program. J. Wildl. Manage., 24(3):259-265.

LOCATION: Madison and Maple Bluff, Wisconsin.

SUMMARY: Reports observtions (20 Mar.-30 May 1959) of songbird mortality that followed a project to protect trees against the approach of Dutch elm disease. Also presents some observations on use of application methods designed to reduce songbird mortatlity. Observations made on the Madison campus of the University of Wisconsin and a nearby town. Tabulates numbers of bird and small mammal species found dead, by date (total 20 sp., 202 individuals).

AGROHAB values obtained from Table 3.

HABITATS: Urban.

Howe, R.W. and G. Jones. 1977. Avian utilization of small woodlots in Dane County, Wisconsin. The Passenger Pigeon, 39(4):313-319.

LOCATION: Dane County, Wisconsin.

OBJECTIVE: To describe the avian communities occupying different sized forest islands and discuss the differential success of various species.

METHODS: Used 9 woodlots, 0.2 to 4.4 ha, all dominated by Quercus spp.. Each site visited once in May and three times between 1 June and 15 July. While following a series of lines perpendicular to the longest axis of a site, birds seen or heard were noted. Duration of the census depended on the area to cover (~2 hr/ha). All censuses conducted on sunny days between 0530 and 1000 with the exception of two largest sites which continued until mid-day.

RESULTS: Number of species increased more or less linearly with area when plotted on a double log scale. A brief description of the distribution and activities of each species is given for each species. Results of the three summer censuses are summarized in Table 1.

AGROHAB values derived from pages 314-315 and Table 1. Activities (N,T,R) recorded if they occurred on at least one site.

HABITATS: Woodlots.

Hunt, R.A., and J.G. Bell. 1973. Crop depredations by waterfowl in Wisconsin. Proc. Sixth Bird Control Seminar, Bowling Green State Univ., Bowling Green, Ohio, pp. 85-101.

LOCATION: Horicon Marsh area, Wisconsin.

SUMMARY: Presents an overview of the histroy of Canada Goose depredations in Wisconsin (1965-1973), predominatly from a juristic perspective (ie. damage claims). Center of the problem is the management of Horicon Marsh in east central Wisconsin. Increases in Canada Goose populations and heavy hunting pressure, resulted in increased goose feeding outside the wildlife refuge, and the subsequent filing of damage claims by local farmers.

AGROHAB values obtained from Table 5.

HABITATS: Alfalfa, buckwheat, corn, corn-stubble, oats, peas, rye, sorghum, soybeans, and wheat-winter.

Ingram, C.R., R.T. Mitchell and A.R. Stickley Jr. 1973. Hopper box treatment of corn seed with methiocarb for protecting sprouts from birds. Proc. Sixth Bird Control Seminar, Bowling Green State Univ., Bowling Green, Ohio, pp. 207-215.

LOCATION: Baldwinsville, New York

OBJECTIVE: To evaluate the repellant efficacy of methiocarb when the powdered chemical is placed directly in the plant hopper with the corn seed.

METHODS: Tests conducted 15 May-10 June 1973. Treated seed was coated in the planter hopper box with 1 lb. of 50% methiocarb per 100 lb. of seed (0.5 percent level). Bird censuses were conducted twice daily during the trials. A census consisted of a species tally of all birds present in a field. Damage was assessed at 10 observation sampling units randomly selected within each field. Three assessments were made on each unit at three day intervals.

RESULTS: An average of 28 sprouts were destroyed per subsample in control fields compared with 1 in treated fields. A total of 298 birds of target, and 327 non-target species were seen in the fields during census periods. Bird censuses revealed that overall post-emergence activity of target species in treated fields decreased from pre-emergence activity whereas non-target species activity increased. Redwing and cowbird activity decreased markedly in methiocarb treated fields. Grackle activity however remained relatively constant.

AGROHAB values derived from Table 5 control values and pp. 209 and 214.

HABITATS: Corn.

Johnson, R.J.and J.W. Caslick. 1982. Habitat relationships of roosting and flocking red-winged blackbirds. J. Wildl. Manage., 46(4):1071-1077.

LOCATION: Finger Lakes Region, New York.

OBJECTIVE: To determine anctivity patterns and habitat relationships of roosting and flocking Red-winged Blackbirds.

METHODS: Blackbirds roosted near north end of Cayuga Lake in cattail marshes, ranging in size from 6 to 1000 ha and containing an average of 2000 to 3,500,000 birds. 70% Red-winged Blackbird, and 25 % Common Grackle, Brown-headed cowbird and European Starling. Used 3 methods to observe behaviour: roadside census, radiotelemetry, and habitat mapping. Had 60 census points at 1.6 km intervals, with 2 censuses/week for a total of 30 between 21 Jul. and 22 Nov. Radio tags placed on 10 male RWBL (only 4 provide usable data) and monitored for 11 bird-days.

RESULTS: Predominant use of cornfields may have resulted from high availability compared to other habitats. However, some selection was involved since not all habitats in study were in proportion to their availability. See appropriate habitat records for details of blackbird use of habitat. There were no records of blackbirds using harvested wheat or oat fields. This is perhaps because of low availability or because some were ploughed soon after harvest and prior to sampling period. Blackbirds are recorded however as using sprouting wheat and ripening oats.

Unharvested cornfields are attractive because they offer food and cover throughout much of the fall and summer. Foods in cornfields include insects (particularly northern corn rootworm beetle), corn and weed seeds (particulary bristlegrass). Blackbirds fed on maturing and dry corn with the most damage occurring during the soft stages.

Hayfields were most heavily used during the earliest period of this study when insects are plentiful and corn is not yet available.

AGROHAB values derived from Figure 4.

HABITATS: Beans, corn, hay, oats, old fields, pastures, and woodlots.

Jubb, G.L. and H.N. Cunningham Jr.. 1976. Birds associated with grapes in Erie County, Pennsylvania. Am. J. Enol. Vitic., (4):161-162.

LOCATION: Erie County, Pennsylvania.

OBJECTIVE: To identify bird species commonly found in selected vinyards, and to examine crop and gizzard contents of selected specimens to determine species feeding on grapes.

METHODS: Observations were made Sept. and Oct., 1973 and 1974. Birds were trapped with fine-mesh nylon netting. Four vinyards, 0.1 to 5.2 ha were studied.

RESULTS: Of 19 species seen, 7 found to have fed on grapes. Two species, Brown Thrasher and Common Flicker were not trapped, therefore their diet is unknown. Most abundant depredator was American Robin.

AGROHAB values obtained form Table 1.

HABITATS: Grapes.

Kahl, R.B. and F.B. Samson. 1984. Factors affecting yield of winter wheat grazed by geese. Widl. Soc. Bull., 12:256-262.

LOCATION: central Missourri.

OBJECTIVE: To evaluate 1) field preference by wild geese, 2) the effect of grazing by captive geese on spring growth and relative density of winter wheat, and 3) the role of grazing, soil moisture and soil type in seed yield of winter wheat.

METHODS: Data obtained from controlled grazing experiments with penned birds 1977-1978 and 1978-1979, and corroborated by observations of wild geese. Wild geese observed in the Swan Lake National Wildlife Refuge area from late Sept. to mid-Apr. of the same years. Canada geese arrived each winter about the time winter wheat was planted. 3 transects driven weekly from Oct. to Apr. to record: flock, activity, field type, size and status (unharvested, harvested, ploughed). See paper for methods used to for objectives 2 and 3.

RESULTS: Free-flying geese fed primarily in cornfields (42%), winter wheat (24%), and grasslands (20%). In both years geese used corn and winter wheat more than expected from availability of each field type. Grazing in fall, winter and spring had a marked effect on the height and relative density of winter wheat.

Observations tabulated for Oct., Nov.-Dec., Jan.-Feb., Mar.-Apr. and for all periods combined. Field preference expressed as % total geese observed in field type divided by % total agricultural area of that type.

AGROHAB values obtained from Table 1.

HABITATS: Corn, grasslands, soybeans, and wheat-winter.

Lussenhop, J. 1977. Urban cemeteries as bird refuges. The Condor, 79:456-461.

LOCATION: Chicago, Illinois.

OBJECTIVE: Planned study to test factors McArthur and Wilson (1967) suggested most important in determining species numbers on mainland habitat islands recolonized each spring. McArthur and Wilson hypothesized that for migratory species immigration rates would be determined primarily by island area, or correlates of area, and spillover of competitors from similar habitats.

METHODS: To investigate area effect compared number of birds nesting in cemeteries 2-136 ha with number nesting in equal-sized neighbouring urban areas. To examine spillover effect compared relative abundance of birds surrounding the cemetery with abundance within city, and looked for correlation between density of starling nests and nests of other hole-nesting species limited to cemeteries. Nest searches done in cemeteries for all diurnal species except Chimney Swifts. Each cemetery was visited 3-12 times and averaged 0.31 ha/h in each. Study areas in adjacent and city sites were censused using the strip census method. Recorded all birds seen or heard along prescribed routes.
RESULTS: Species observed categorized into 3 groups: 1) restricted to urban areas 2) restricted to cemeteries and 3) found in both. Number of species in area adjacent to cemeteries not greater than numbers in city. Density of starlings was uncorrelated with density of other hole-nesting species. Found some spillover from cemeteries into adjacent areas. Number of species increased with area - most rapidly in cemeteries.

AGROHAB results obtained from Table 2 and p. 457.

HABITATS: Urban, and urban-cemetery.

MacLellan, C.R. 1959. Woodpeckers as predators of the codling moth in Nova Scotia. Can. Entomol., 90:673-680.

LOCATION: Nova Scotia.

OBJECTIVE: To determine species of woodpeckers feeding on codling moths and their effectiveness as pest control agents.

METHODS: Number of larvae estimated by counting number on 1 vertical foot of tree-trunk surface on each of 6 randomly selected trees/orchard. Bird predation determined by counting number of holes made in cocoons by woodpeckers. Species, sex, and frequency of occurrence of woodpeckers in 60 study orchards recorded for the years 1953-1958.

RESULTS: Hairy Woodpeckers and Downy Woodpeckers are the only 2 species known to feed on the codling moth in any of sampling areas during time larvae were vulnerable. Birds begin to search for moth in apple orchards in late July but most of feeding occurs in fall. Activity declines in late Dec. and is slight throughout winter and spring months.

When codling moth are at or below an average of 12 larvae/6 vertical feet of tree-trunk and natural control agents are active, insecticides are not necessary (i.e. in N.S. in 1950's). When below this level in spring, natural agents keep damage below an economic level. Woodpecker predation more intense in orchards with high codling moth populations. Such predation may not be adequate to reduce pest populations to desired level.

AGROHAB values derived from texual description.

HABITATS: Apples.

McNeil, R., N. David and P. Mousseau. 1976. Les oiseaux et le peril aviaire. Ecologie de la zone l'Aeroport International de Montreal. Les Presses de l'Universite de Montreal, Montreal.

LIEU: Montréal, Québec.

OBJECTIF: Déterminer les espèces d'oiseaux de la région de l'aéroport international de Montréal qui pourraient représenter un danger pour la sécurité aérienne.

MÉTHODES: Une technique modifiée de recensement des oiseaux nicheurs a été employée. La zone inventoriée d'une superficie de 53,3 milles carrés, a été divisée en neuf transects de recensement dont la longueur variait de 17 à 21,5 milles, et 346 points d'observation y ont été établis. Les transects ont été visités trois ou quatre fois par mois de mai à septembre 1971 et une fois par mois de septembre 1971 à mai 1972.

RÉSULTATS: Sur les 185 espèces observées au cours de l'étude, 37 ont été considérées comme un danger pour la sécurité aérienne. Quatre espèces (carouge à épaulettes, étourneau sansonnet, mainate bronzé et vacher à tête brune) ont été jugées extrêmement dangereuses en raison de leur nombre et de leurs moeurs. Un échantillon de 325 spécimens de l'avifaune nicheuse a été obtenu, et des analyses du contenu stomacal on été effectuées.

Les indications AGROHAB sont données dans le texte et les tableaux VI, IX, XI et XIV. La présence d'un certain nombre d'espèces dans divers types d'habitats est mentionnée, mais sans indication de la saison. Ces espèces suivent les autres espèces énumérées pour le type considéré d'habitat dans les tableaux.

HABITATS: Haricots secs, bâtiments abandonnés, cerisiers, mais, carnaux de drainage et d'irrigation, clôtures, lisières de forêts, terrains en herbes, foin, haies, lacs et étangs, marais et tourbières, avoine, terres agricoles à l'abandon, pâturages, pois secs, emprises, rivières, ruisseaux, terrain gazonnés, zones urbaines et boisés.

Mitterling, L.A. 1965. Bird damage on apples. Proc. of the American Society for Horticultural Science, 87:66-72.

LOCATION: ? Connecticut (not stated).

OBJECTIVE: To quantify bird damage in a 9 acre orchard containing the varieties Cortland, McIntosh and Richared Delicious (among others). Species causing damage considered secondarily.

METHODS: Observations of bird activity were made periodically during fruit maturation over three seasons. These included the bird species (when possible) and approximate flock size, if in groups.

RESULTS: Fruit of Cortland appeared to be prefered over McIntosh and Richared Delicious in all three seasons. Observed that the slightest movement by the observer was disturbing to some of the birds. Occassionally movement in one 'block' disturbed individuals in an adjacent block. Bird

visits were more frequent during the morning than the afternoon and evening hours. Birds appeared less sensitive to an observer in the morning. Most of the damage done to apples was caused by Blue Jays. Small flocks of 5-9 birds were common.

AGROHAB values derived from pages 66 and 68.

HABITATS: Apples.

Pietz, M.A.J. and P.J. Pietz. 1987. American Robin defends fruit resource against Cedar Waxwings. J. Field Ornithol., 58(4):442-444.

LOCATIION: St. Cloud, Minnesota.

OBJECTIVE and METHODS: Documents the defense of a crabapple tree by an American Robin against Cedar Waxwings. Activity occurred 31 Mar.-13 Apr. 1986. Observations made from window about 3 m from tree and approximately 2 h/day.

RESULTS: A robin successfully defended the tree from flocks of up to 15 waxwings, 1 Blue Jay and 1 Purple Finch. Defense was not possible when flock size exceeded 30. Cedar Waxwing and American Robin were observed feeding on crabapples.

AGROHAB values obtained from text.

HABITATS: Crabapples.

Pinowski, B.C. 1977. Foraging behavior of the Eastern Bluebird. Wilson Bull., 89(3):404-414.

LOCATION: Macomb County, Michigan.

OBJECTIVE: To describe predatory behaviour in the Eastern Bluebird and examine the effects of several environmental factors on foraging.

METHODS: Observations were made late Mar. to early Aug. during 1972 and 73. Randomly observed six pairs of bluebirds at all times of day, under all types of weather and at various stages of the nesting cycle. Measured several parameters on a foraging sequence including type of foraging tactic employed. Also recorded temperature, percentage of sunshine and estinated wind speed at the foraging site.

RESULTS: Describes various foraging tactics: dropping, flycatching, gleaning, flight-gleaning and hopping. 78.8% of 2638 foraging sequences observed were accomplished by the dropping mode. Principal tactic used in all seasons. Feeding tactics were found to vary in frequency according to weather conditions.

AGROHAB values obtained from pages 404 and 407. 'Summer'= June, July and August.

HABITATS: Cherries, mulberries and old fields.

Potvin, N., J. Bergeron et C. Fernet. 1976. Regime alimentaire d'oiseaux frequentant un agrosysteme. Can. J. Zool., 54:1992-2000.

LIEU: Lennoxville, Québec.

OBJECTIF: Déterminer le régime alimentaire des cinq principales espèces d'oiseaux fréquentant un système agricole typique des Cantons-de-l'Est au Québec.

MÉTHODS: Tous les oiseaux ont été capturés sur le terrain de la Station de Reserches de Lennoxville et dans la region avoisinante. Le territoire d'étude comprenait deux zones cultivées, l'une de 333 ha et l'autre de 58 ha, bordées par des boisés et des cours de l'eau. Les oiseaux échantillonnés ont été abattus à trois périodes de la saison de culture: au temps des semences (10 au 19 mai), au milieu de mai (14 au 29 juillet) et immédiatement avant la récolte (12 août au 16 septembre). Les contenus stomacaux ont été analysés pour déterminer les grandes composantes animales et végetales de la nourriture c.-à-d. grains de céréales, graines de mauvaises herbes et invertébrés.

RÉSULTATS: Quatre espèces causeraient des domages aux récoltes de mais et d'orge. Le pigeon biset, le carouge à épaulettes et le mainate bronzé consomment du mais et d'orge aux temps des semences aux temps des récoltes. Le vacher à tête brune mange peu de mais, mais beaucoup d'orge, tandis que l'étourneau sansonnet semble pire ennemi du mais; le pigeon biset cause le plus de dommages aux cultures d'orge.

Des indications AGROHAB sont obtenus des tableaux 1 à 5.

HABITATS: Luzerne, cerisiers, mais, graminées, phléole de près et trèfle.

Reed, A., G. Chapdelaine and P. Dupuis. 1977. Use of farmland in spring by migrating Canada Geese in the St. Lawrence Valley. J. Appl. Ecol., 14:667-680.

LOCATION: St. Lawrence R. area, Quebec.

OBJECTIVE: To determine use of farmland by migrating Canada Geese.

METHODS: Study covered 3 springs, (Mar.-May), 1973-1975. Most agricultural land used for production of grass and forage legumes (clover and alfalfa), pasture and winter fodder. Traditional rotation of grassland: autumn ploughing and spring sowing of oats and/or barley undersown with grasses and legumes. 1st autumn cereal harvested, 2nd to 4th autumn undersown. Forage crop provide fodder and pasture. Land then ploughed and cycle repeated. More recently there is increased acreage in corn. Estimates of distribution and abundance made from air or from ground, covering fresh-water nontidal, freshwater tidal and brackish water tidal portions of river and estuary. Standard roadside counts made 2-3 times/week throughout spring, recording: number of geese, activity (% feeding), type of field, presence of water in field, etc. for each flock observed. This data compared with availability of different crops. Feeding methods and diet of geese determined by direct observation and by gut analysis of sampled birds.

RESULTS: Geese arrived 21 Mar.-15 Apr. and left 11-14 May. Over the entire study area geese used fields of grass and corn more than would have been predicted on the basis of their availability. Grasslands and corn received equal feeding pressure, but due to greater acreage grassland was used more (60% versus 16% of total geese observed). Concluded much of the use made by geese of agricultural land in study area was beneficial or neutral in its effect on growth of cultivated plants. Grass leaves and stems are the most important (index value of 41%, adjusted to account proportional usage of different field types), and corn kernels are the 2nd highest at 20.7 %.

AGROHAB values obtained from Figure 6 index of usage.

HABITATS: Corn-Stubble, and grassland.

Rodenhouse, N.L. and L.B. Best. 1983. Breeding ecology of Vesper Sparrows in corn and soybean fields. Am. Midl. Nat., 110(2):265-275.

LOCATION: Story County, Iowa.

OBJECTIVE: To document Vesper Sparrow nesting success, estimate annual production of young on corn and soybean fields, and determine how agricultural practices affect population densities and the breeding biology of Vesper Sparrows.

METHODS: Study conducted Apr.-Aug. 1979 and 1980. Vesper Sparrows commonly found along fencerows (narrow uncultivated strips between cultivated fields) usually with barbed wire fences. Territories usually extended no more than 80 m into fields. Sparrows sang and foraged along fencerow edges and nested on ground in cropland. Corn and soybeans rotated annually. Fencerows sprayed with 2,4-D in late June or early July to contol broadleaf weeds. Spraying had no noticeable effect on territorial sparrows in this study. Territory size estimated by measuring area enclosed by perimeter song and foraging sites. Birds mist-netted and tagged (USFWS coloured leg bands). Nest searches conducted by dragging nylon rope between crop rows.

RESULTS: Vesper Sparrow densities in this study low (estimated densities of 10.8 pairs/40 ha) compared wih those in uncultivated habitats (e.g. 57-86 pairs/40 ha for old field bordered by woodland). Sparrows breeding in soybean and corn fields may represent "sink" populations. "Source" populations inhabit favourable (uncultivated) environments and reproduce above replacement levels. "Sink" populations inhabit less favourable environments and reproduce below replacement levels.

Vesper Sparrows nest in corn residue early in the season (early-mid Apr.), and elsewhere when tillage operations begin. When crop canopy is closed the fields are no longer suitable for nesting. They perch on clods of soil and tall crop residue prior to incubation, and from rows of corn near fencerows during late breedng season (by early July corn is taller than fence posts). Availability of insects in crop fields increases from around 23 May to 19 June.

Tall weeds in soybean fiels used as song perches in late breeding season. Early season nests on clumps of crop residue. When crop 10 cm tall nests placed at base of plant in row crop.

Fencerows were used by 90% of the males and 63% of the females as song perches during defence of territories and preincubation period. Density of pairs differed according to type of fencerow: 3.6 pairs/km along herbaceous, 5.4 along herbaceous-shrub, and 6.5 along shrub.

AGROHAB values obtained from text pp. 268-270.

HABITATS: Corn, fencerows, and soybeans.

Rogers, J.G. Jr., and J.T. Linden. 1977. Some aspects of grackle feeding behaviour in newly planted corn. J. Wildl. Manage., 41(3):444-447.

LOCATION: Newark, Delaware.

OBJECTIVE: To detect, describe and attempt to quantify some aspects of blackbird feeding behavior in newly planted and sprouting corn. Also to identify possible alterations occurring as a result of feeding on corn seed treated with the repellant methiocarb.

METHODS: Observations made on 36 rows (137 m long) in Apr. of 1975 and 76. Each planting consisted of some rows of untreated corn seed and some of corn seed treated with methiocarb. Methiocarb applied in the seed box of the planter. Observations made starting day after planting. Individual birds watched and behavioural observations tape-recorded from time it entered field until it left.

RESULTS: Grackles most active during the morning with a peak between 0800 and 1000. Damage began immediately after planting. Almost all seeds removed by digging rather than sprout pulling. Grackles made relatively short visits and consumed few (~ 1.5) seeds per visit.

AGROHAB results obtained from page 445.

HABITATS: Corn-Sprouting.

Roseberry, J.L. and W.D. Klimstra. 1970. The nesting ecology and reproductive performance of the Eastern Meadowlark. Wilson Bull., 82(3):243-267.

LOCATION: Carbondale, Illinois.

OBJECTIVE: To investigate the nesting ecology and reproductive performance of the Eastern Meadowlark.

METHODS: Reports on a study of 450 nests conducted 1960-67. Searched all land-use types on the Carbondale Reasearch Area (1450 ac), except for intertilled cropland and woodland, from 1960-63, and selected fields 1964-67. Nest searches were performed by crews of 4-8 people walking abreast at intervals of 4 ft. systematically searching all cover. Searches were performed 10 May - 10 Sept.. Acreage figures used in the calculation of nest densities per land-use type (Table 3) were obtained by multiplying the acreage of each tract by the number of years it was searched.

RESULTS: Preffered nesting habitat is pasture followed by hayfields, grassland, winter wheat fields, and fallow areas. Presence of dead grass stems at ground level and the absence of woody vegetation in the immediate vicinity appeared to be a prerequisite for nesting.

AGROHAB values derived from Table 3. Nests/100 ac converted to nests/100 ha. Soilbank fields = grassland, and hay is predominantly meadow fesque, orchard grass, timothy, bluegrass and cheat.

HABITATS: Alfalfa, clover-red, fallow, grassland, hay, and wheat-winter.

Somers, J.D., R.G. Garthshore, F.F. Gilbert, and R.J. Brooks. 1981. Movements and habitat use by depredating Red-winged Blackbirds in Simcoe County, Ontario. Can. J. Zool., 59:2206-2214.

LOCATION: Simcoe County, Ontario.

OBJECTIVE: To determine movements and habitat use by depredating Red-winged Blackbirds.

METHODS: Studies conducted from May through Sept 1977, 1978, 1979. No sighting data obtained for 1977. Roosting population estimated by flyway counts. Birds trapped using territorial male traps. Patagial or leg tags affixed to each bird. Some birds observed with radiotelemetry (results not broken down by season, only by year). Sighting of colour-tagged birds obtained from opportunistic observations from roadsides. Irrespective of duration, each occupancy of habitat type was used for compiling number of sightings. 1978 & 1979 sightings made from early July to mid-Sept (for 8, week-long periods) to encompass temporal progression of crop maturation. 31 ha winter wheat observed separately from 16 July to 2 Aug..

RESULTS: Sightings of colour-tagged birds more frequent in corn and oats than any other habitat type. Note that temporal shift in frequency of sightings of blackbirds in cereal crops suggests that maturity of crops contributed to their depredation. Prime foraging area within 7 km of roost, exhibit preference for oats over wheat.

Wheat is wheat stubble, not standing or swathed. Observations of winter fields in 1978 and 1979 indicated that no large flocks fed in standing crops. In 1979, no more than 30 Red-winged Blackbirds (not tagged) were present in 2 standing wheat fields.

AGROHAB values obtained from Table 3. Number of birds in each of three sampling periods for each month were averaged to get one value.

HABITATS: Corn, hay, oats, old fields, strip cover and wheat.

Strip cover includes trees, ditches, fences and gardens.

Speirs, J.M. and R. Orenstein. 1967. Bird populations in fields of Ontario County, 1965. Can. Field Nat., 81:175-183.

LOCATION: Ontario County, Ontario.

OBJECTIVE: To determine the breeding bird populations of various habitats.

METHODS: Breeding bird censuses were made on eleven fields, one in each township of Ontario County during the summer of 1965. A hollow strip census method was used with a measured strip four chains wide surrounding 40 acre fields to give a census area of approximately 25 acres on each field.

RESULTS: Six of the eleven fields were comprised of more than one habitat type, and this information was not used. Of the remaining five fields, 4 were pastures, and one was an old field.

AGROHAB values were obtained from Table 5. The highest number of birds recorded from the four fields was used (maximum potential impact), and the number of birds per 100 acres converted to number of birds per 100 hectares.

HABITATS: Old fields and pastures.

Stevenson, A.B. and B.B. Virgo, 1971. Damage by robins and starlings to grapes in Ontario. Plant Sci., 51:201-210.

LOCATION: Niagara Peninsula, Ontario.

OBJECTIVE: To record species and abundance of birds present in Ontario vinyards, and determine which are depredators of grapes.

METHODS: Study began in 1962 and was continued by B.B.Virgo in 1965 and R.G.B.Brown in 1967 (see C.W.S. Report Series No. 27). Identity and abundance of birds determined in Jun. and Jul. by strip census. Identity and numbers recorded as each species flushed from transect. Density calculated based on area of each transect. Samples collected for gut analysis i.e. grapes weed seeds, animal matter and leaf material.

RESULTS: 12 species observed on study site, American Robin (32.1 %) and European Starling (64.2 %) considered most important depredators. Remaining 1.7% made up of 10 species; only 4 observed taking grapes. Areas near woodland had more robins. Large starling roost 1.2 km from site.

AGROHAB values obtained from Table 3.

HABITATS: Grapes.

Stickley, A.R. Jr. and C.R. Ingram. 1973. Two tests of the avian repellant, methiocarb, in Michigan sweet cherry orchards. Proc. Sixth Bird Control Seminar, Bowling Green State University, Bowling Green, Ohio, pp. 41-46.

LOCATION: Traverse City, Michigan.

OBJECTIVE: Tests conducted to determine efficacy of methiocarb as a bird repellant on cherries applied without a sticker.

METHODS: Applied to plots (rates given) within both a mature and a young orchard with histories of heavy bird damage. Dates of field trials not stated. Censuses of species and numbers of birds entering the test areas were made intermittently throughout the test period.

RESULTS: A student's t-test showed no differnce between treated and untreated plots ($p<0.05$) for either orchard (young or mature).

AGROHAB values obtained from pages 44 and 45. Species observed at 'harvest period', month and date not given. Bird pressure described as negligible.

HABITATS: Cherries.

Stone, C.P., W.F. Shake and D.J. Langowski. 1974. Reducing damage to highbush blueberries with a carbamate repellent. Wildl. Soc. Bull., 2(3):135-139.

LOCATION: Holland, Michigan.

OBJECTIVE: To determine effectiveness of methiocarb in reducing bird damage to highbush blueberries.

METHODS: Study site was 3 acre (1.2 ha) field of highbush blueberries bordered by: other blueberry plantings, railroad track, bushes, trees, and fallow field. Methiocarb applied at 1 lb/100 acres July 20, 1972. Damage estimates made prior to treatment (July 19, 20) and at 6 to 14 days post-treatment (Jul. 26, Aug. 3). Number of birds/hour (based on 15-minute observation periods throughout day) recorded.

RESULTS: Nested analyses of variance showded that post-treatment differences between treated and untreated halves of the field were highly significant. Damage consisted almost entirely of missing berries; few pecked berries were observed. For the 14 day period following treatment bird numbers were nearly equal to pre-treatment counts on the treated half but increased 5 fold on the control half.

AGROHAB values derived from pp. 137-138 and Table 2 (birds/hour seen in post-treatment control plots of study). Conversion to hectares for AGROHAB purposes.

HABITATS: Blueberries.

Thurston, R.T. and O. Prachuabmoth. 1971. Predation by birds of tobacco hornworm infesting tobacco. J. Econ. Entomol., 64(6):1548-1549.

LOCATION: Kentucky.

OBJECTIVE: To determine if birds are important predators of tobacco hornworm larvae, and if so which species are responsible.

METHODS: Observations made July 1970. Tests conducted on caged and uncaged plants to determine survival of adult tobacco hornworm and larval stages.

RESULTS: Common Grackle only bird observed feeding on hornworm larvae in study area. European Starling, American Robin and American Crow observed feeding on hornworm in other areas. European Starling and American Crow most commonly seen birds in the fields. House Sparrow not feeding on larvae but may have been feeding larvae to young.

AGROHAB values obtained from text.

HABITATS: Tobacco.

Virgo, B. B. 1971. Bird damage to sweet cherries in the Niagara Peninsula. Can. J. Plant Sci., 51:415-423.

LOCATION: Niagara Peninsula, Ontario.

OBJECTIVE: To determine bird species feeding on cherries, and evaluate their relative importance as depredators.

METHODS: Orchards chosen in 3 locations: next to farmland, woodland, and marsh. Species type and abundance recorded by walking transect through orchard and counting number present. Transect walked every 0.5 h from 0400-2100 h. Only counted birds on ground or trees. Woodland and farmland orchards surveyed on 6 days and marshland 5 days. Samples taken for gut analysis.

RESULTS: European Starling, Common Grackle, American Robin and Red-winged Blackbird most numerous in all 3 orchard types and observed damaging cherries. Northern Oriole only other species observed damaging cherries, but did so infrequently. From gut analysis European Starling, Common Grackle and Red-winged Blackbird had cherries as most frequent item in diet. American Robin appeared to be in orchard to feed on animal matter, primarilly worms and ground beetles. 46% of American Robins observed on ground compared with <10% of other species. Author concluded that habitat surrounding an orchard had little effect on the damage it received.

AGROHAB values obtained from Table 3.

HABITATS: Cherries.

Warnock, J.E. and G.B. Joselyn. 1964. Nesting of pheasants in soybean fields. J. Wildl. Manage., 28(3):589-592.

LOCATION: central Illinois.

OBJECTIVE: To investigate the nesting ecology of Ring-necked Pheasants in soybean fields (part of a larger study).

METHODS: Nesting data collected from 100, 10 acre plots. Soybeans searched between July 13-25. Strip cover areas and non agricultural areas searched 3 times, once each in May, Jun. or Jul. and Aug.. Hayfields (crop type not specified) and pastures searched twice, once each in May, Jun. or Jul. and Aug.. Oat and wheat fields searched when possible 1-5 days before clipping or harvesting from late June through July; some searched after clipping or harvesting. Cornfields searched once in July several weeks after cultivation. Author refers readers to original study for details of study design.

RESULTS: Found 454 nests in the 23,200 acres searched. Highest densities of successful nests were found in hay, followed by strip cover, pastures, wheat & oats and soybeans.

AGROHAB nesting intensities derived from Table 2.

HABITATS: Hay, pastures, strip cover, soybeans, and wheat & oats.

Pastures includes permanent bluegrass (grazed and ungrazed), semipermanent legumes and tame grass.
Strip cover includes roadsides, fencerows, grass waterways, rights-of-way, and drainage ditches.

Wegner, J.F. 1976. Corridors for birds and small mammals in hedgerows adjoining a beech-maple farm woodlot. MSc. Thesis, Carleton University, Ottawa, Ontario, Canada.

LOCATION: 16.5 km south of Ottawa, Ontario.

OBJECTIVE: To investigate the connections between a beech-maple woods and the adjacent fields and fencerows as indicated by movements of birds and small mammals.

METHODS: Concerning bird observations only. Used 4 plots each with one fixed observation point to standardize amount of each habitat. Morning observations began 15 min. before sunrise and took about 3.5 h. Evening observations began 3 h before sunset. For each bird movement origin, destination, species, observation post, time and date were recorded. Each plot was observed 47-54 h from May-Oct. 1975 and totals were standardized to 42 h (7h/plot/month).

RESULTS: Fencerows connect the wood to the surrounding agricultural mosaic and concentrate the activity of birds and small mammals into a habitat corridor that may relieve the isolating effect of farmland surrounding the wood. Birds seldom flew directly across open fields between woods. More

species of birds moved more frequently between woods and fencerows than between any other habitat. Poorly developed fencerow vegetation restricted foraging by wood nesters into fields.

AGROHAB values obtained from Appendix 3C. Observations lumped for May-Oct.; activity recorded for all months in AGROHAB.

HABITATS: Fencerows, pastures, and woodlots.

West, G. C. 1967. Nutrition of Tree Sparrows during winter in central Illinois. Ecology, 48(1):58-67.

LOCATION: Urbana, Illinois.

OBJECTIVE: To compare energy obtained by Tree Sparrows through natural feeding with that required under laboratory conditions, and to determine if the selection of food items was correlated with their energy content. The relationship between the proportion of different kinds of foods available and those used was also determined.

METHODS: Tree Sparrows observed and collected Nov.-Mar., 1954-59. Birds collected with a .22 claiber pistol with 'dust' shot. The esophagus, proventriculus and gizzard were removed and the contents washed into a petri dish. Contents allowed to air dry, and then identifiable seeds and insects were separated into species, oven dried and weighed to 0.1 mg. The remaining crushed material was separated from the grit and weighed. Grit was weighed separately and not included in the weight of the total stomach contents.

RESULTS: Thirty-six recognizable species of plant seeds made up 99% of the winter diet of the sparrows with 9 of these consistuting the major portion. Grass seeds made up 77.7% of the total foods.

AGROHAB values obtained from Table 1 and text.

HABITATS: Buckwheat, corn and fencerows.

Westmoreland, D. and A. Woolf. 1984. Wildlife damage to corn in southern Illinois: assessment and control. Trans. Illinois Acad. Sci., 77(1/2):3-8.

LOCATION: Union Couty, Illinois.

OBJECTIVE: To test techniques of controlling deer depredation in corn fields.

METHODS: Study carried out in Jul. and Aug. 1981 in 24 corn plots. Method of recording observations of wildlife depredation not specified.

RESULTS: 4 species of depredators encountered. Species differed significantly in importance ($P>0.1$): bird (Common Grackle) damage occurred most frequently, raccoons 2nd in importance. Damage by squirrels and deer minimal.

AGROHAB values derived from Table 1.

HABITATS: Corn.

Williams, J.B. and G.O. Batzli. 1979. Winter diet of a bark-foraging guild of birds. Wilson Bull., 91(1):126-131.

LOCATION: central Illinois.

OBJECTIVE: To produce a quantitative analysis of the diets of bark-foraging birds which co-exist.

METHODS: Collected Red-headed Woodpeckers Dec.-Feb. 1974-75, and 1975-76, and other species Dec.-Feb. 1975-76 from upland deciduous forests. After collection birds were immediately injected with formalin or placed in an ice-chest. Contents of stomach were identified and then placed in a petri dish. Quantitative analysis was achieved by identifying the food item at 50 randomly selected points in the petri dish.

RESULTS: Relative frequency (%) of each food category found in the stomachs is tabulated. Niche breadths and niche overlaps also calculated. A correlation between mean food size and bill length was found ($p<0.01$). Body weight was also positively correlated with food size ($p<0.02$).

AGROHAB values obtained from Table 1.

HABITATS: Corn, grapes, sunflowers, and wheat.

Yahner, R.H. 1983. Seasonal dynamics, habitat relationships, and management of avifauna in farmstead shelterbelts. J. Wildl. Manage. 47(1):85-104.

LOCATION: Dakota County, Minnesota.

OBJECTIVE: To examine the seasonal dynamics and habitat relationships of avian populations and communities in farmstead shelterbelts.

METHODS: Study conducted from July 1978 to June 1980. Native herbaceous vegetation consisted of prairie, now replaced with extensive cropland (principally corn) and pastures. 7 shelterbelts from 0.210 to 1.787 ha in area and from 3 to 9 rows in width. 30 species of trees and shrubs present (see paper for species list). All sites censused in same morning on 15 occassions/season (4 seasons/yr for 2 yrs) giving 120 censuses/shelterbelt. Summer censuses conducted 10 July-1 Sept., autumn 26 Sept.-1 Dec., winter 26 Dec.-6 Mar., spring 24 Apr.-12 June. Mean population densities (no. individuals/100 ha) of each bird species calculated by season (15 censuses/season and 8 seasons) and based on data pooled from all shelterbelts. Data used to derive relative numerical (RN), temporal (RT) and spatial (RS) components. Sum of the 3 components used to derive an importance value (IV) for each bird species. Importance values then used to arbitrarily categorize individual species as being of high (IV>150), moderate (83-149), low (61-82), or negligible importance (< or = 60) to the total avian community. Study also

assessed land-use variables: distances of shelterbelts to woodlots, old fields, croplands, pastures, roadsides, lawns, water and buildings. Also quantified % area within 200 m of shelterbelts that consisted of old fields, croplands, pastures and lawns.

RESULTS: 87 bird species observed in 7 farmstead shelterbelts during the two year study. The greatest number of species occurred in spring, followed by summer, autumn, and winter, respectively. By using importance values (IV) as an arbitrary means of classifying bird species in terms of their combined numerical, spatial and temporal use of shelterbelts: 14 (16%) were designated as being of high, 23 (26%) of moderate, 10 (12%) of low, and 40 (46%) of negligible importance. The vast majority of the high-importance species were omnivorous (57%) or granivorous (29%). Insectivorous food habits were predominant among species comprising groups defined as being of moderate, low or negligible importance.

AGROHAB values from Table 1. Activities not specified for all bird species.

HABITATS: Shelterbelts.

APPENDIX 2/ ANNEXE 2

Land use statistics for the
Mixed-Wood Plain ecozone in Canada

Statisiques d'utilisation
des terres pour l'écozone des
plaines de forêts mixtes au Canada

The geographical areas in the Mixed-Wood Plains ecozone and described in this appendix were defined by the 1986 Census of Agriculture (Statistics Canada) with the following changes:

Central Ontario - Haliburton not included
Eastern Ontario - no changes
Southern Ontario - no changes
Western Ontario - no changes
Beauce - no changes
Eastern Townships - no changes
Lower St. Lawrence - Kamouraska, Rivière-du-Loup, and Témiscouata added
Mauricie - Champlain and St. Maurice added
Nicolet - no changes
Outaouais - Argenteuil, Hull, and Pontiac added
Quebec - Charlevoix-Est and Charlevoix-Ouest not included
North of Montreal - no changes
Southwest of Montreal - no changes
Richelieu - no changes

Les régions géographiques dans l'écozone des plaines de forêts mixtes et représentées dans cette annexe ont été déterminées par le Recensement de l'Agriculture 1986 (Statistique Canada) avec les changements suivants:

Centre de l'Ontario - Haliburton n'est pas inclus
Est de l'Ontario - pas de changements
Sud de l'Ontario - pas de changements
Ouest de l'Ontario - pas de changements
Beauce - pas de changements
Cantons de l'Est - pas de changements
Bas St-Laurent - Kamouraska, Rivière-du-Loup et Témiscouata ajoutés
Mauricie - Champlain et St. Maurice ajoutés
Nicolet - pas de changements
Outaouais - Argenteuil, Hull et Pontiac ajoutés
Québec - Charlevoix-Est et Charlevoix-Ouest pas inclus
Nord de Montréal - pas de changements
Sud-Ouest de Montréal - pas de changements
Richelieu - pas de changements

Land Use/Utilisation des Terres (Ha)

Region	Total Farmland/ Total des Fermes	Crops/ En Culture	Improved Pasture/ Pâturage Ameliorée	Fallow/ Jachère	Other Improved/ Autre Améliorée	Région
Southern Ontario	1590701	1285131	54266	29902	39439	Sud de l'Ontario
Western Ontario	1684895	1119924	159691	19837	36887	Ouest de l'Ontario
Central Ontario	870105	416858	75934	15499	20416	Centre de l'Ontario
Eastern Ontario	1050780	488164	100503	9700	21127	Est de l'Ontario
Beauce	403394	133727	37842	2694	6027	Beauce
Eastern Townships	382346	134139	36804	2122	7068	Cantons de L'Est
Lower St. Lawrence	187274	86178	14959	1068	1586	Bas St-Laurent
Maurice	92221	49739	8531	958	1285	Mauricie
Nicolet	322521	187421	29782	2600	4541	Nicolet
Outaouais	119684	43579	13630	849	3054	L'Outaouais
Quebec	371072	166159	31281	3403	6345	Québec
North of Montreal	221389	140662	12569	3712	5035	Nord de Montréal
Southwest of Montreal	254797	189476	10904	2512	4326	Sud-Ouest de Montréal
Richelieu	343911	255935	15202	2851	5942	Richelieu
"TOTAL"	7895090	4697092	601898	97707	163078	

Land Use/Utilisation des Terres (Ha)

Region	Unimproved Pasture/ Pâturage Non Améliorée	Other Unimproved/ Autre Non Améliorée	Woodland/ Terre à Bois	Région
Southern Ontario	94862	39966	47131	Sud de l'Ontario
Western Ontario	142684	124204	7453	Ouest de l'Ontario
Central Ontario	108528	160485	72385	Centre de l'Ontario
Eastern Ontario	157608	193561	80133	Est de l'Ontario
Beauce	172316	39359	11424	Beauce
Eastern Townships	133446	50015	18750	Cantons de L'Est
Lower St. Lawrence	65417	11424	6633	Bas St-Laurent
Maurice	21624	6738	3341	Mauricie
Nicolet	67773	22568	7833	Nicolet
Outaouais	34948	16600	7013	L'Outaouais
Quebec	125819	23679	14389	Québec
North of Montreal	37187	14082	8139	Nord de Montréal
Southwest of Montreal	22712	15055	9809	Sud-Ouest de Montréal
Richelieu	39439	13391	10648	Richelieu
TOTAL	1224363	731127	305081	

Hay and Fodder Crops/Foin et Cultures Fourragères (ha)

Region	Barley for Fodder/ Orge pour Fourrages	Corn for Silage/ Maïs à Ensilage	Oats for Fodder/ Avoine pour Fourrages	Tame Hay/ Foin Cultivée	Région
Southern Ontario	1122	46667	3231	129843	Sud D'Ontario
Western Ontario	4777	78198	4647	330989	L'Ouest D'Ontario
Central Ontario	1208	26163	3243	176225	Centre D'Ontario
Eastern Ontario	2579	37699	5930	261354	L'Est D'Ontario
Beauce	1556	2744	5186	108015	Beauce
Eastern Townships	710	5173	3413	98026	Cantons de L'Est
Lower St. Lawrence	638	787	2002	61137	Bas St. Laurent
Maurice	816	2254	1075	27835	La Maurice
Nicolet	1118	9202	2600	100479	Nicolet
Outaouais	142	3000	858	28821	L'Outaouais
Quebec	1896	3288	4791	113323	Québec
North of Montreal	1355	5463	1375	56292	Nord de Montréal
Southwest of Montreal	1206	11143	887	52408	Sud-Ouest de Montréal
Richelieu	910	14542	1396	69448	Richelieu
TOTAL	20033	246323	40634	1614195	

Region	Oilseeds (Ha)\ Grains Oléagineuses				Sod and Nursery Products (Ha)\ Gazon et Produits de Pépinière		
	Canola Colza	Flaxseed Lin	Soybeans Soja	Sunflowers Tournesol	Nursery Products Produits de Pépinière	Sod Gazon	Région
Southern Ontario	1541	107	320293	90	2379	2036	Sud D'Ontario
Western Ontario	29608	3107	42704	709	2166	2097	L'Ouest D'Ontario
Central Ontario	3779	0	11567	328	825	2333	Centre D'Ontario
Eastern Ontario	1070	0	5679	0	517	1327	L'Est D'Ontario
Beauce	0	0	12	0	115	124	Beauce
Eastern Townships	0	0	28	0	216	216	Cantons de L'Est
Lower St. Lawrence	0	0	0	0	60	0	Bas St. Laurent
Maurice	0	0	99	0	89	0	La Maurice
Nicolet	0	0	413	14	130	0	Nicolet
Outaouais	205	0	79	0	14	0	L'Outaouais
Quebec	0	0	14	0	304	559	Québec
North of Montreal	0	0	122	0	379	1564	Nord de Montréal
Southwest of Montreal	57	0	1857	0	383	1686	Sud-Ouest de Montréal
Richelieu	0	0	1772	0	356	635	Richelieu
TOTAL	36260	3214	384639	1141	7933	12577	

Vegetables\Légumes (ha)

Region	Total Area\ Superficie Total	Asparagus\ Asperge	Beans\ Haricots	Beets\ Betteraves	Broccoli\ Brocoli	Brussel Sprouts\ Choux de Bruxelles	Cabbage\ Chou	Cantalopes and Melons\ Melons brodés et Melons	Carrots\ Carrotes	Région
Southern Ontario	39480	1340	2097	156	622	32	839	161	479	Sud D'Ontario
Western Ontario	8833	416	246	34	229	38	310	10	628	L'Ouest D'Ontario
Central Ontario	12492	115	421	39	133	5	291	12	1238	Centre D'Ontario
Eastern Ontario	1278	28	21	7	63	2	29	0	21	L'Est D'Ontario
Beauce	229	0	3453	341	1	0	2093	0	3344	Beauce
Eastern Townships	268	8	4	2	2	0	3	0	9	Cantons de L'Est
Lower St. Lawrence	77	0	0	0	0	0	5	0	0	Bas St. Laurent
Maurice	426	100	1	0	8	0	14	0	25	La Maurice
Nicolet	732	33	9	0	3	0	51	0	25	Nicolet
Outaouais	118	0	0	0	0	0	0	0	0	L'Outaouais
Quebec	1369	57	65	25	43	1	64	1	204	Québec
North of Montreal	8103	78	0	162	104	02	1182	13	758	Nord de Montréal
Southwest of Montreal	14566	25	2120	83	378	17	635	30	2009	Sud-Ouest de Montréal
Richelieu	6148	65	934	25	0	1	51	0	134	Richelieu
TOTAL	94119	2265	9371	874	1586	178	5567	227	8874	

continued\suite...

Vegetables Continued\ Légumes Suite (ha)

Region	Cauliflower\ Chou-fleur	Celery\ Céleri	Corn Sweet\ Maïs	Cucumbers\ Concombres	Lettuce\ Laitue	Onions\ Oignons	Onions Green\ Oignons Verts	Parsnips\ Panais	Peas Green\ Pois Verts	Peppers\ Poivron	Région
Southern Ontario	821	76	10335	1965	192	947	83	16	3172	1368	Sud D'Ontario
Western Ontario	368	105	2919	87	225	472	15	55	1025	83	L'Ouest D'Ontario
Central Ontario	409	81	5581	38	227	838	38	24	1617	54	Centre D'Ontario
Eastern Ontario	38	1	761	29	11	12	13	0	14	14	L'Est D'Ontario
Beauce	811	0	9827	1109	1493	1057	0	0	2930	0	Beauce
Eastern Townships	0	0	197	4	2	1	0	0	1	0	Cantons de L'Est
Lower St. Lawrence	0	0	15	0	0	0	0	0	0	0	Bas St. Laurent
Maurice	0	0	187	1	0	0	5	0	0	0	La Maurice
Nicolet	7	0	352	130	2	2	0	0	0	20	Nicolet
Outaouais	0	0	65	0	0	0	0	0	0	0	L'Outaouais
Quebec	26	2	543	49	27	12	9	4	1	4	Québec
North of Montreal	540	32	2623	473	134	123	35	128	239	99	Nord de Montréal
Southwest of Montreal	102	323	2966	246	1285	707	158	0	1469	305	Sud-Ouest de Montréal
Richelieu	10	0	2629	181	12	192	28	0	1209	67	Richelieu
TOTAL	3212	620	39000	4292	3610	4363	384	227	11677	2014	

continued\suite...

Vegetables Continued\Légumes Siute (ha)

Region	Potatoes\ Pommes de Terre	Pumpkins\ Citrouille	Radishes\ Radis	Rhubarb\ Rhubarbe	Rutabagas\ Rutabagas	Spinach\ Epinard	Squash\ Gourde	Tomatoes\ Tomate	Zucchini\ Courgette	Other Vegetables\ Autre Legumes	Région
Southern Ontario	4462	208	120	27	335	94	453	12676	84	792	Sud D'Ontario
Western Ontario	7721	85	49	27	954	79	73	117	22	147	L'Ouest D'Ontario
Central Ontario	906	327	41	1	27	28	104	483	35	274	Centre D'Ontario
Eastern Ontario	460	31	5	2	33	2	25	67	8	0	L'Est D'Ontario
Beauce	269	0	0	0	670	0	0	1391	0	0	Beauce
Eastern Townships	262	1	1	0	1	0	3	12	0	0	Cantons de L'Est
Lower St. Lawrence	861	0	0	0	0	0	0	0	0	0	Bas St. Laurent
Maurice	444	0	0	0	0	0	0	1	0	0	La Maurice
Nicolet	1278	2	0	0	0	0	0	43	0	29	Nicolet
Outaouais	24	0	0	0	0	0	0	8	0	0	L'Outaouais
Quebec	3838	14	5	5	95	1	5	51	5	28	Québec
North of Montreal	3285	65	12	22	302	0	24	429	19	94	Nord de Montréal
Southwest of Montreal	1482	71	258	2	62	177	46	477	81	418	Sud-Ouest de Montréal
Richelieu	940	24	14	0	0	0	7	324	2	98	Richelieu
"TOTAL"	26232	878	505	86	2479	381	740	16079	256	1880	

Tree Fruits\Arbres Fruitieres (ha)

Region	Total Area\ Superficie Total	Apples\ Pommes	Apricots\ Abricots	Cherries Sour\ Cerises Aigres	Cherries Sweet\ Cerises Douces	Peaches\ Pêches	Pears\ Poires	Plums and Prunes\ Prunes et Pruneau	Other\ Autre	Région
Southern Ontario	13882	6110	126	1022	438	3378	1538	835	32	Sud D'Ontario
Western Ontario	3986	3740	5	41	18	31	99	36	13	L'Ouest D'Ontario
Central Ontario	7118	2726	2	48	5	1	71	24	0	Centre D'Ontario
Eastern Ontario	486	471	0	1	1	0	4	3	0	L'Est D'Ontario
Beauce	33	30	0	0	0	0	0	1	0	Beauce
Eastern Townships	621	610	0	0	1	0	3	3	0	Cantons de L'Est
Lower St. Lawrence	20	14	0	0	1	0	0	1	0	Bas St. Laurent
Maurice	21	20	0	0	0	0	0	0	0	La Maurice
Nicolet	138	136	0	0	0	0	0	0	0	Nicolet
Outaouais	33	83	0	0	0	0	0	0	0	L'Outaouais
Quebec	439	440	0	0	2	0	4	12	0	Québec
North of Montreal	1770	1758	0	0	2	0	2	5	0	Nord de Montréal
Southwest of Montreal	2068	2046	0	2	1	0	10	5	0	Sud-Ouest de Montréal
Richelieu	3790	3771	0	1	1	0	9	5	0	Richelieu
TOTAL	34405	21955	133	1115	470	3410	1740	930	45	

Berries and Grapes\Petits Fruits et Rasin (ha)

Region	Total Area\ Superficie Total	Blueberries\ Bleuets	Grapes\ Raisin	Raspberries\ Framboises	Strawberries\ Fraises	Other\ Autre	Région
Southern Ontario	10611	179	9333	135	938	17	Sud de l'Ontario
Western Ontario	805	25	0	162	585	21	Ouest de l'Ontario
Central Ontario	689	15	0	180	469	5	Centre de l'Ontario
Eastern Ontario	544	25	0	133	383	3	Est de l'Ontario
Beauce	121	0	0	33	183	0	Beauce
Eastern Townships	265	26	9	83	140	5	Cantons de L'Est
Lower St. Lawrence	70	0	0	0	61	0	Bas St-Laurent
Maurice	181	0	0	34	145	0	Mauricie
Nicolet	372	6	0	67	256	0	Nicolet
Outaouais	34	0	0	5	25	0	L'Outaouais
Quebec	855	24	1	178	654	1	Québec
North of Montreal	1012	22	4	228	755	0	Nord de Montréal
Southwest of Montreal	417	13	15	108	272	6	Sud-Ouest de Montréal
Richelieu	589	14	36	146	384	0	Richelieu
TOTAL	16575	349	9398	1492	5250	58	

Other Crops Continued\Autres Cultures Suite (ha)

Region	Beans Dry\ Haricots Sec	Forage Seed\ Semence de Plantes fourragères	Lentils\ Lentilles	Mustard Seed\ Graine de Moutarde	Millet Grain\ Millet	Peas Dry\ Pois Sec	Root Crops For Feed\ Plantes-racines Fourragères	Tobacco\ Tabac	Triticale\ Triticale	Other Crops\ Autre Cultures	Région
Southern Ontario	16429	27979	0	0	79	54	0	25458	2792	511	Sud de l'Ontario
Western Ontario	36983	1157	0	33	497	0	0	0	675	45	Ouest de l'Ontario
Central Ontario	934	553	0	0	0	0	16	575	716	35	Centre de l'Ontario
Eastern Ontario	492	658	14	0	16	277	9	0	183	0	Est de l'Ontario
Beauce	65	11	0	0	0	0	0	0	0	0	Beauce
Eastern Townships	0	0	0	0	0	0	0	0	0	0	Cantons de L'Est
Lower St. Lawrence	0	54	0	0	0	0	0	0	0	0	Bas St-Laurent
Maurice	0	0	0	0	0	0	0	0	0	0	Mauricie
Nicolet	108	72	31	0	0	0	0	0	0	0	Nicolet
Outaouais	0	0	0	0	0	0	0	246	0	0	L'Outaouais
Quebec	111	42	0	0	0	0	0	0	0	0	Québec
North of Montreal	42	54	73	0	0	16	20	3016	0	0	Nord de Montréal
Southwest of Montreal	217	24	30	0	0	0	0	0	0	0	Sud-Ouest de Montréal
Richelieu	479	0	21	0	0	115	0	3	0	0	Richelieu
TOTAL	55860	30604	169	33	592	462	45	29298	4366	591	

APPENDIX 3 / ANNEXE 3

Bird use of farmland habitats characteristic of the Mixed-Wood Plain ecozone in Canada (Tabled alphabetically by habitat type in English)

Utilisation, par les oiseaux, des habitats agricoles caractéristiques de l'écozone des plaines de forêts mixtes au Canada (présentation dans l'ordre alphabétique anglais, selon le type d'habitat)

HABITAT: Alfalfa/Luzerne

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Canada Goose	Hunt & Bell 1973			F54	F54	F54				F7	F7	F7		Bernache du Canada
Ring-necked Pheasant	Graber & Graber 1963					N1	N1	N1						Faisan de chasse
Northern Bobwhite	Graber & Graber 1963					N1	N1	N1						Colin de Virginie
Killdeer	Graber & Graber 1963					1	1	1						Pluvier kildir
Upland Sandpiper	Graber & Graber 1963					1	1	1						Maubèche des champs
Mourning Dove	Graber & Graber 1963					1	1	1						Tourterelle triste
Chimney Swift	Graber & Graber 1963					1	1	1						Martinet ramoneur
Northern Flicker	Graber & Graber 1963					1	1	1						Pic flamboyant
Eastern Kingbird	Graber & Graber 1963					1	1	1						Tyran tritri
Horned Lark	Graber & Graber 1963					3	3	3						Alouette cornue
Barn Swallow	Graber & Graber 1963					2	2	2						Hirondelle des granges
American Crow	Graber & Graber 1963					1	1	1						Corneille d'Amérique
American Robin	Graber & Graber 1963					1	1	1						Merle d'Amérique
Brown Thrasher	Graber & Graber 1963					1	1	1						Moqueur roux
Common Yellowthroat	Graber & Graber 1963					1	1	1						Paruline masquée
Northern Cardinal	Graber & Graber 1963					1	1	1						Cardinal rouge
Indigo Bunting	Graber & Graber 1963					1	1	1						Passerin indigo
Field Sparrow	Graber & Graber 1963					1	1	1						Bruant des champs
Savannah Sparrow	Graber & Graber 1963					N1	N1	N1						Bruant des prés
Grasshopper Sparrow	Graber & Graber 1963					N2	N2	N2						Bruant sauterelle
Swamp Sparrow	Graber & Graber 1963					1	1	1						Bruant des marais
Bobolink	Graber & Graber 1963					N2	N2	N2						Goglu
Red-winged Blackbird	Graber & Graber 1963					N3	N3	N3						Carouge à épaulettes
Eastern Meadowlark *	Graber & Graber 1963					N2	N2	N2						Sturnelle des prés *
	Rosebery & Klimstra 1970					N2	N2	N2	N2	N2				
Common Grackle	Potvin et al. 1976							F3						Quiscale bronzé
Brown-headed Cowbird	Graber & Graber 1963					N1	N1	N1						Vacher à tête brune

HABITAT: Alfalfa/Luzerne

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
American Goldfinch	Graber & Graber 1963					1	1	1						Chardonneret jaune
House Sparrow	Graber & Graber 1963					2	2	2						Moineau domestique

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perché R = Roosting/Se reposant

Graber and Graber 1963 — 1 = <10, 2 = 10-50, and 3 = >50 birds/100 ha

* - listed as Meadowlark species, may be Eastern Meadowlark, Western Meadowlark or both.

Hunt & Bell 1973 — # - percentage of damage claims in Wisconsin (1965-1973), attributable to crop

'Spring' = March, April and May
'Fall' = September, October and November

Potvin et al. 1976 — 1 = <30%, 2 = 30-60% et 3 = >60% fréquence d'apparition du type de nourriture dans le gésier

Roseberry & Klimstra 1970 — 1 = <10, 2 =10-30, 3 =31-50, and 4 = >50 nests/100 ha

HABITAT: Alfalfa & Timothy/Luzerne & Phléole des Prés

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
European Starling	Fischl & Cacamise 1985	F1	F1	F1	F1	F1	F1	F1	F1	F1	F1	F2	F1	Etourneau sansonnet

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

Fischl and Cacamise 1985 1 = -1 to < 0, 2 = 0 to 0.5 (E^* values)

E^* is the Relativized Electivity Index based on O'Neil's selectivity coefficient Wi (O'Neil 1969). Values approach +1 when habitats are used in proportions greater than their abundance, and -1 when they are used in proportions less than their abundance.

HABITAT: Apples/Pommiers

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Downy Woodpecker	MacLellan 1959	F1	F1	F1	F1	F1	F1	F2	F2	F2	F3	F3	F2	Pic mineur
Hairy Woodpecker	MacLellan 1959	F1	F1	F1	F1	F1	F1	F2	F2	F2	F3	F3	F2	Pic chevelu
Blue Jay	Mitterling 1965							F	F					Geai bleu
American Crow	Mitterling 1965							F	F					Corneille d'Amérique
American Robin	Mitterling 1965							F	F					Merle d'Amérique
European Starling	Fischl & Cacamise 1985	F1	F1	F1	F1	F1	F1	F1	F1	F1	F1	F1	F1	Etourneau sansonnet
	Mitterling 1965							F	F					
	Brown 1974								F					
Northern Oriole	Mitterling 1965							F	F					Oriole du Nord

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

Brown 1974 — 1 = <0.5, 2 = 0.5-3.0, and 3 = >3.0 mean no. visits per 15 min

Fischl and Cacamise 1985 — 1 = -1 to < 0, 2 = 0 to 0.5 (E* values)

E* is the Relativized Electivity Index based on O'Neil's selectivity coefficient Wi (O'Neil 1969). Values approach +1 when habitats are used in proportions greater than their abundance, and -1 when they are used in proportions less than their abundance.

MacLellan 1959 — 1 = slight, 2 = moderate, and 3 = high feeding activity

HABITAT: Barley/Orge

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Rock Dove	Potvin et al. 1976					F2		F3	F2	F2				Pigeon biset
European Starling	Potvin et al. 1976					F1		F1	F2	F2				Etourneau sansonnet
Red-winged Blackbird	Potvin et al. 1976					F2		F3	F2	F2				Carouge à épaulettes
Common Grackle	Potvin et al. 1976					F1		F3	F2	F2				Quiscale bronzé
Brown-headed Cowbird	Potvin et al. 1976					F3		F3	F3	F3				Vacher à tête brune

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

Potvin et al. 1976 1 = <30%, 2 = 30-60% et 3 = >60% fréquence d'apparition du type de nourriture dans le gésier

HABITAT: Beans/Haricots

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Red-winged Blackbird	Johnson & Caslick 1982									F1				Carouge à épaulettes

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

Johnson and Caslick 1982 1 = <30%, 2 = 30-60%, and 3 = >60% utilization

HABITAT: Beans-Dry/Haricots Secs

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Present, Season Not Specified														Présent, Saison Non Précisée
Canada Goose	McNeil et al. 1976													Bernache du Canada
Rock Dove	McNeil et al. 1976													Pigeon biset
Mourning Dove	McNeil et al. 1976													Tourterelle triste

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

McNeil et al. 1976 1 = <30%, 2 = 30-60% et 3 = >60% utilisation

HABITAT: Blueberries/Bleuet

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Mourning Dove	Dolbeer et al. 1973								F1					Tourterelle triste
Red-headed Woodpecker	Dolbeer et al. 1973								F2					Pic à tête rouge
Northern Flicker	Stone et al. 1974							F1	F1					Pic flamboyant
	Dolbeer et al. 1973								F2					
Eastern Kingbird	Stone et al. 1974						+	+						Tyran tritri
Blue Jay	Dolbeer et al. 1973								F2					Geai bleu
	Bollengier et al. 1973							F1	F1					
American Crow	Dolbeer et al. 1973								F2					Corneille d'Amérique
Black-capped Chickadee	Bollengier et al. 1973							F1	F1					Mésange à tête noire
Eastern Bluebird	Bollengier et al. 1973							F1	F1					Merle-bleu de l'Est
American Robin	Conover 1982							F3	F3	F3				Merle d'Amérique
	Stone et al. 1974							F1	F1					
	Dolbeer et al. 1973								F3					
	Bollengier et al. 1973							F3	F3					
Gray Catbird	Stone et al. 1974							F1	F1					Moqueur chat
	Dolbeer et al. 1973								F2					
	Bollengier et al. 1973							F1	F1					
Northern Mockingbird	Conover 1982							F3	F3	F3				Moqueur polyglotte
Brown Thrasher	Conover 1982							F1	F1	F1				Moqueur roux
	Stone et al. 1974							F1	F1					
	Dolbeer et al. 1973								F2					
	Bollengier et al. 1973							F1	F1					
Cedar Waxwing	Stone et al. 1974							F1	F1					Jaseur des cèdres
	Dolbeer et al. 1973								F2					
	Bollengier et al. 1973							F1	F1					
Loggerhead Shrike	Stone et al. 1974						+	+						Pie-grièche migatrice
European Starling	Conover 1982							F3	F3	F3				Etourneau sansonnet

HABITAT: Blueberries/Bleuet

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
European Starling	Dolbeer et al. 1973								F3					Etourneau sansonnet
European Starling	Stone et al. 1974							F1	F1					Etourneau sansonnet
	Dolbeer et al. 1973								F3					
	Bollengier et al. 1973							F3	F3					
Scarlet Tanager	Bollengier et al. 1973							F1	F1					Tangara écarlate
Northern Cardinal	Stone et al. 1974							F1	F1					Cardinal rouge
Rose-breasted Grosbeak	Stone et al. 1974							F1	F1					Cardinal à poitrine rose
Rufous-sided Towhee	Dolbeer et al. 1973								F1					Tohi à flancs roux
	Bollengier et al. 1973							F1	F1					
Field Sparrow	Bollengier et al. 1973							F1	F1					Bruant des champs
Song Sparrow	Bollengier et al. 1973							F1	F1					Bruant chanteur
	Stone et al. 1974						+	+						
Red-winged Blackbird	Dolbeer et al. 1973								F1					Carouge à épaulettes
	Stone et al. 1974						+	+						
Eastern Meadowlark	Stone et al. 1974						+	+						Sturnelle des prés
Common Grackle	Stone et al. 1974							F1	F1					Quiscale bronzé
	Dolbeer et al. 1973								F3					
Northern Oriole	Conover 1982							F3	F3	F3				Oriole du Nord
	Stone et al. 1974							F1	F1					
	Dolbeer et al. 1973								F2					
American Goldfinch	Stone et al. 1974						+	+						Chardonneret jaune

HABITAT: Blueberries/Bleuet

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

Bollengier et al. 1973	1 = <10, 3 = >25 average number of visits/hr.
Conover 1982	1 = <30 and 3 = >60 birds/hr/ha
Dolbeer et al. 1973	1 = Rare, 2 = Occasional, 3 = Very Common
Stone et al. 1974	1 = <30%, 2 = 30-60%, and 3 = >60% Frequency of appearance of food type in the gut.

HABITAT: Buckwheat/Sarrisin

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Canada Goose	Hunt & Bell 1973									F1	F1	F1		Bernache du Canada
Mourning Dove	Armstrong & Noakes 1981				F1	F1	F1	1F	1F	F1	F1			Tourterelle triste
American Tree Sparrow	West 1967	F	F									F		Bruant hudsonien

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

Armstrong and Noakes 1981 1 = < 30%, 2 = 30-60%, and 3 = >60 % frequency of occurence of food type in stomach

Hunt & Bell 1973 % - percentage of damage claims in Wisconsin (1965-1973), attributable to crop

'Fall' = September, October and November

HABITAT: Buildings-Abandoned/Bâtiments Abandonnés

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
European Starling	McNeil et al. 1976			+	+	N	N							Etourneau sansonnet
Common Grackle	McNeil et al. 1976							P	P	P	P			Quiscale bronzé
Present, Season Not Specified														Présent, Saison Non Précisé
Purple Martin	McNeil et al. 1976													Hirondelle noire
Cliff Swallow	McNeil et al. 1976													Hirondelle à front blanc
Barn Swallow	McNeil et al. 1976													Hirondelle des granges

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

McNeil et al. 1976 1 = <30%, 2 = 30-60% et 3 = >60% utilisation

HABITAT: Canteloupes/Melons Brodés

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Present, Season Not Specified														
American Crow *	Conover 1985													Présent, Saison Non Précisée Corneille d'Amérique

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

Conover 1985

* - In different control plots Common Crow damaged an average of 4% of the ripe canteloupes, and 18% of the ripe tomatoes during each trial period. Months not specified.

HABITAT: Cherries/Cerisiers

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Ring-billed Gull	Blockpoel & Struger 1987							F						Goéland à bec cerclé
Rock Dove	Potvin et al. 1976					F1*		F2	F1	F1				Pigeon biset
Red-headed Woodpecker	Guarino et al. 1974						F	F						Pic à tête rouge
Northern Flicker	Virgo 1971						1	1						Pic flamboyant
	Guarino et al. 1974						F	F						
Blue Jay	Guarino et al. 1974						F	F						Geai bleu
American Crow	Virgo 1971						3	3						Corneille d'Amérique
Eastern Bluebird	Pinowski 1977						F	F	F					Merle-bleu de l'Est
American Robin	Virgo 1971						3/F1	3/F1						Merle d'Amérique
*	Guarino et al. 1974						F	F						*
	Guarino et al. 1973						F3	F3						
	Brown 1974						F2	F3	F					
Gray Catbird	Guarino et al. 1974						+	+						Moqueur chat
Brown Thrasher	Guarino et al. 1974						F	F						Moqueur roux
Cedar Waxwing	Guarino et al. 1974						F	F						Jaseur des cedres
	Guarino et al. 1973						F1	F1						
European Starling	Potvin et al. 1976							F2	F1	F1				Etourneau sansonnet
	Virgo 1971						3/F3	3/F3						
*	Guarino et al. 1974						F	F						*
	Guarino et al. 1973						F1	F1						
	Brown 1974						F1	F3	F					
Northern Cardinal	Virgo 1971						1	1						Cardinal rouge
Rose-breasted Grosbeak	Guarino et al. 1974						F	F						Cardinal à poitrine rose
	Guarino et al. 1973						F1	F1						
Red-winged Blackbird	Virgo 1971						1/F3	1/F3						Carouge à épaulettes
	Guarino et al. 1974						+	+						
Common Grackle	Potvin et al. 1976					F1*		F1						Quiscale bronzé

HABITAT: Cherries/Cerisiers

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Common Grackle	Virgo 1971						2/F3	2/F3						Quiscale bronzé
	Guarino et al. 1974						F	F						
	Guarino et al. 1973						F1	F1						
	Brown 1974						F1	F1						
Northern Oriole	Virgo 1971						1/F1	1/F1						Oriole du Nord
	Guarino et al. 1974						F	F						
American Goldfinch	Virgo 1971						1	1						Chardonneret jaune
Present, Season Not Specified														Présent, Saison Non Précisée
American Crow	Stickley & Ingram 1973													Corneille d'Amérique
Gray Catbird	Stickley & Ingram 1973													Moqueur chat
Brown Thrasher	Stickley & Ingram 1973													Moqueur roux
Cedar Waxwing	Stickley & Ingram 1973													Jaseur des cedres
European Starling	McNeil et al. 1976													Etourneau sansonnet
	Stickley & Ingram 1973													
Northern Cardinal	McNeil et al. 1976													Cardinal rouge
Red-winged Blackbird	Stickley & Ingram 1973													Carouge à épaulettes
Brown-headed Cowbird	Stickley & Ingram 1973													Vacher à tête brune
Northern Oriole	Stickley & Ingram 1973													Oriole du Nord
American Goldfinch	McNeil et al. 1976													Chardonneret jaune
American Robin	Stickley & Ingram 1973													Merle d'Amérique

HABITAT: Cherries/Cerisiers

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

Brown 1974

1 = <0.5, 2 = 0.5-3.0, and 3 = >3.0 mean no. visits per 15 min

Guarino et al. 1973

1 = <10, 3 = >25 average number of visits/hr.

Guarino et al. 1974

* - American Robins and Common Grackles caused most of the damage to sweet cherries; European Starlings to the tart cherries.

McNeil et al. 1976

1 = <30%, 2 = 30-60% et 3 = >60% utilisation

Potvin et al. 1976

1 = <30%, 2 = 30-60% et 3 = >60% fréquence d'apparition du type de nourriture dans le gésier

Cerises

* - probablement des fruits de la saison précédente

Virgo 1971

ßa/ßb

a) 1 = <5 birds/ha/day of observation (highest mean)
   2 = 5-10 " "
   3 = >10 " "

b) 1 = <30% freq. of cherries in gut of birds sampled
   3 = >60% " "

HABITAT: Clover-Red/Trèfle Rouge

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Gray Partridge	Graber & Graber 1963					1	1	1						Perdrix grise
Ring-necked Pheasant	Graber & Graber 1963					M1	M1	M1						Faisan de chasse
Northern Bobwhite	Graber & Graber 1963					M1	M1	M1						Colin de Virginie
Killdeer	Graber & Graber 1963					1	1	1						Pluvier kildir
Upland Sandpiper	Graber & Graber 1963					1	1	1						Maubèche des champs
Mourning Dove	Graber & Graber 1963					2	2	2						Tourterelle triste
Chimney Swift	Graber & Graber 1963					1	1	1						Martinet ramoneur
Ruby-throated Hummingbird	Graber & Graber 1963					1	1	1						Colibri à gorge rubis
Red-headed Woodpecker	Graber & Graber 1963					1	1	1						Pic à tête rouge
Northern Flicker	Graber & Graber 1963					1	1	1						Pic flamboyant
Eastern Kingbird	Graber & Graber 1963					1	1	1						Tyran tritri
Horned Lark	Graber & Graber 1963					2	2	2						Alouette cornue
Northern Rough-winged Swallow	Graber & Graber 1963					1	1	1						Hirondelle à ailes hérissées
Barn Swallow	Graber & Graber 1963					2	2	2						Hirondelle des granges
Eastern Bluebird	Graber & Graber 1963					1	1	1						Merle-bleu de l'Est
American Robin	Graber & Graber 1963					1	1	1						Merle d'Amérique
European Starling	Graber & Graber 1963					3	3	3						Etourneau sansonnet
Common Yellowthroat	Graber & Graber 1963					2	2	2						Paruline masquée
Summer Tanager	Graber & Graber 1963					1	1	1						Tangara vermillon
Northern Cardinal	Graber & Graber 1963					1	1	1						Cardinal rouge
Indigo Bunting	Graber & Graber 1963					1	1	1						Passerin indigo
Field Sparrow	Graber & Graber 1963					1	1	1						Bruant des champs
Vesper Sparrow	Graber & Graber 1963					2	2	2						Bruant vespéral
Savannah Sparrow	Graber & Graber 1963					M1	M1	M1						Bruant des prés
Grasshopper Sparrow	Graber & Graber 1963					M1	M1	M1						Bruant sauterelle
Song Sparrow	Graber & Graber 1963					1	1	1						Bruant chanteur

HABITAT: Clover-Red/Trèfle Rouge

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Swamp Sparrow	Graber & Graber 1963					1	1	1						Bruant des marais
Bobolink	Graber & Graber 1963					N2	N2	N2						Goglu
Red-winged Blackbird	Graber & Graber 1963					N3	N3	N3						Carouge à épaulettes
Eastern Meadowlark *	Graber & Graber 1963					N2	N2	N2						Sturnelle des prés *
	Roseberry & Klimstra 1970					N3	N3	N3	N3	N3				
Common Grackle	Graber & Graber 1963					2	2	2						Quiscale bronzé
Brown-headed Cowbird	Graber & Graber 1963					N1	N1	N1						Vacher à tête brune
Northern Oriole	Graber & Graber 1963					1	1	1						Oriole du Nord
American Goldfinch	Graber & Graber 1963					1	1	1						Chardonneret jaune
House Sparrow	Graber & Graber 1963					3	3	3						Moineau domestique

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

Graber and Graber 1963 1 = <10, 2 = 10-50, and 3 = >50 birds/100 ha

* = listed as Meadowlark species, may be Eastern Meadowlark, Western Meadowlark or both.

Roseberry & Klimstra 1970 1 = <10, 2 =10-30, 3 =31-50, and 4 = >50 nests/100 ha

HABITAT: Clover-Sweet/Mélilot

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Upland Sandpiper	Graber & Graber 1963					1	1	1						Maubèche des champs
Mourning Dove	Graber & Graber 1963					1	1	1						Tourterelle triste
Horned Lark	Graber & Graber 1963					2	2	2						Alouette cornue
Barn Swallow	Graber & Graber 1963					1	1	1						Hirondelle des granges
American Crow	Graber & Graber 1963					1	1	1						Corneille d'Amérique
American Robin	Graber & Graber 1963					1	1	1						Merle d'Amérique
Brown Thrasher	Graber & Graber 1963					1	1	1						Moqueur roux
European Starling	Graber & Graber 1963					1	1	1						Etourneau sansonnet
Chipping Sparrow	Graber & Graber 1963					1	1	1						Bruant familier
Field Sparrow	Graber & Graber 1963					1	1	1						Bruant des champs
Savannah Sparrow	Graber & Graber 1963					1	1	1						Bruant des prés
Song Sparrow	Graber & Graber 1963					1	1	1						Bruant chanteur
Bobolink	Graber & Graber 1963					N2	N2	N2						Goglu
Red-winged Blackbird	Graber & Graber 1963					N3	N3	N3						Carouge à épaulettes
Eastern Meadowlark *	Graber & Graber 1963					N2	N2	N2						Sturnelle des prés *
Common Grackle	Graber & Graber 1963					2	2	2						Quiscale bronzé
Brown-headed Cowbird	Graber & Graber 1963					1	1	1						Vacher à tête brune
American Goldfinch	Graber & Graber 1963					1	1	1						Chardonneret jaune
House Sparrow	Graber & Graber 1963					2	2	2						Moineau domestique

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

Graber and Graber 1963 1 = <10, 2 = 10-50, and 3 = >50 birds/100 ha

* = listed as Meadowlark species, may be Eastern Meadowlark, Western Meadowlark or both.

HABITAT: Corn/Maïs

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Canada Goose	Kahl & Samson 1984	F1	F1	F1	F1						F1	F1	F1	Bernache du Canada
	Hunt & Bell 1973									F92	F92	F92		
Mallard	Balcomb et al. 1984					+								Canard colvert
Turkey Vulture	Castrale 1986						1	1						Urubu à tête rouge
Northern Harrier	Graber & Graber 1963	1												Busard Saint-Martin
Cooper's Hawk	Castrale 1986						<1	<1						Epervier de Cooper
Red-shouldered Hawk	Balcomb 1983					F								Buse à épaulettes
Red-tailed Hawk	Graber & Graber 1963	1				1	1	1						Buse à queue rousse
American Kestrel	Graber & Graber 1963	1				1	1	1						Crécerelle d'Amérique
Northern Bobwhite	Graber & Graber 1963					1	1	1						Colin de Virginie
	Castrale 1986						<1	<1						
Killdeer	Ashton & Jackson 1983					+	+							Pluvier kildir
	Basore et al. 1986					N1	N1	N1						
	Castrale 1986						8	8						
Spotted Sandpiper	Graber & Graber 1963					1	1	1						Chevalier branlequeue
Upland Sandpiper	Graber & Graber 1963					1	1	1						Maubèche des champs
Rock Dove	Potvin et al. 1976					F3			F2*	F2*				Pigeon biset
	Castrale 1986						4	4						
Mourning Dove	Armstrong & Noakes 1981	F*	F*	F*	F3	F3	F3	F2	F2	F2	F3	F3	F3	Tourterelle triste
	Ashton & Jackson 1983					+	+							
	Graber & Graber 1963	1												
	Castrale 1986						7	7						
Yellow-billed Cuckoo	Graber & Graber 1963					1	1	1						Coulicou à bec jaune
Short-eared Owl	Graber & Graber 1963	1												Hibou des marais
Chimney Swift	Graber & Graber 1963					1	1	1						Martinet ramoneur
	Castrale 1986						3	3						
Red-headed Woodpecker	Williams & Batzli 1979	F3	F3										F3	Pic à tête rouge

HABITAT: Corn/Maïs

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Red-bellied Woodpecker	Graber & Graber 1963	1												Pic à ventre roux
Red-breasted Sapsucker	Williams & Batzli 1979	F3	F3										F3	Pic à poitrine rouge
Downy Woodpecker	Graber & Graber 1963	1				1	1	1						Pic mineur
	Williams & Batzli 1979	F2	F2										F2	
Northern Flicker	Graber & Graber 1963	1				1	1	1						Pic flamboyant
Eastern Phoebe	Graber & Graber 1963					1	1	1						Moucherolle phébi
	Castrale 1986						<1	<1						
Eastern Kingbird	Graber & Graber 1963					1	1	1						Tyran tritri
Horned Lark	Ashton & Jackson 1983					+	+							Alouette cornue
	Graber & Graber 1963	2				N2	N2	N2						
	Castrale 1986						14	14						
Purple Martin	Graber & Graber 1963					1	1	1						Hirondelle noire
	Castrale 1986						2	2						
Tree Swallow	Graber & Graber 1963					1	1	1						Hirondelle bicolore
Barn Swallow	Ashton & Jackson 1983					+	+							Hirondelle des granges
	Graber & Graber 1963					1	1	1						
	Castrale 1986						26	26						
Blue Jay	Balcomb et al. 1984				+	+								Geai bleu
	Graber & Graber 1963					1	1	1						
	Ashton & Jackson 1983					+	+							
American Crow	Balcomb et al. 1984					+								Corneille d'Amérique
	Graber & Graber 1963	1				1'	1	1						
	Castrale 1986						6	6						
Black-capped Chickadee	Graber & Graber 1963	1												Mésange à tête noire
White-breasted Nuthatch	Williams & Batzli 1979	F3	F3										F3	Sittelle à poitrine blanche
Brown Creeper	Williams & Batzli 1979	F1	F1										F1	Grimpereau brune
Carolina Wren	Graber & Graber 1963	1												Troglodyte de Caroline

HABITAT: Corn/Maïs

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Eastern Bluebird	Graber & Graber 1963	1				1	1	1						Merle-bleu de l'Est
	Castrale 1986						1	1						
American Robin	Ashton & Jackson 1983					+	+							Merle d'Amérique
	Balcomb et al. 1984				F	F								
	Graber & Graber 1963	1												
	Castrale 1986						4	4						
Northern Mockingbird	Graber & Graber 1963					1	1	1						Moqueur polyglotte
	Castrale 1986						1	1						
Brown Thrasher	Graber & Graber 1963					1	1	1						Moqueur roux
Water Pipit	McNeil et al. 1976									F				Pipit spioncelle
Loggerhead Shrike	Graber & Graber 1963					1	1	1						Pie-grièche migatrice
European Starling	Ashton & Jackson 1983					+	+							Etourneau sansonnet
	Fischl & Cacamise 1985	F2	F2	F2	F2	F1	F1	F1	F2	F2	F2	F3	F2	
	Graber & Graber 1963	2												
	McNeil et al. 1976								F1	F1	F1			
	Castrale 1986						1	1						
Northern Cardinal	Graber & Graber 1963	1				1	1	1						Cardinal rouge
	Castrale 1986						3	3						
Rose-breasted Grosbeak	Graber & Graber 1963					1	1	1						Cardinal à poitrine rose
Indigo Bunting	Ashton & Jackson 1983					T	T							Passerin indigo
	Castrale 1986						4	4						
American Tree Sparrow	Graber & Graber 1963	2												Bruant hudsonien
	West 1967		F									F	F	
Chipping Sparrow	Graber & Graber 1963					1	1	1						Bruant familier
Field Sparrow	Graber & Graber 1963					1	1	1						Bruant des champs
Vesper Sparrow	Ashton & Jackson 1983					+	+							Bruant vespéral
	Basore et al. 1986							N1						

HABITAT: Corn/Maïs

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Vesper Sparrow	Rodenhouse & Best 1983				FPN1	FPN1		P1						Bruant vespéral
	Castrale 1986						<1	<1						
Savannah Sparrow	Ashton & Jackson 1983			•		+	+							Bruant des prés
	Balcomb et al. 1984				F	F								
	Graber & Graber 1963	1												
Grasshopper Sparrow	Balcomb et al. 1984				F	F								Bruant sauterelle
Song Sparrow	Ashton & Jackson 1983					+	+							Bruant chanteur
	Castrale 1986						1	1						
Dark-eyed Junco	Graber & Graber 1963	2												Junco ardoisé
Lapland Longspur	Graber & Graber 1963	2												Bruant lapon
Snow Bunting	McNeil et al. 1976	+	+	+							+	+	+	Bruant des neiges
Bobolink	Ashton & Jackson 1983					+	+							Goglu
Red-winged Blackbird	Ashton & Jackson 1983					T	T							Carouge à épaulettes
	Basore et al. 1986						N1	N1						
	Balcomb et al. 1984						F	F						
	Graber & Graber 1963	2												
	Johnson & Caslick 1982							F2	FL3	FL3	F2	F1		
	McNeil et al. 1976								F3	F3	F3			
	Potvin et al. 1976					F2		F1*	F3	F3				
	Somers et al. 1981							F1	F2	F3				
	Castrale 1986						16	16						
Common Grackle	Ashton & Jackson 1983					+	+							Quiscale bronzé
	Balcomb et al. 1984					F								
	McNeil et al. 1976							F3	F2		F3			
	Potvin et al. 1976					F3		F1*	F3	F3				
	Westmoreld and Woolf 1984							F3	F3					
	Castrale 1986						8	8						
Brown-headed Cowbird	Basore et al. 1986						N1	N1						Vacher à tête brune

HABITAT: Corn/Maïs

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Brown-headed Cowbird	Ashton & Jackson 1983					+	+							Vacher à tête brune
	McNeil et al. 1976			F	F	F	F			F2	F1			Vacher à tête brune
	Potvin et al. 1976					F2*		F1*	F2*	F2*				
	Castrale 1986						1	1						
American Goldfinch	Graber & Graber 1963	1				1	1	1						Chardonneret jaune
House Sparrow	Ashton & Jackson 1983					+	+							Moineau domestique
	Graber & Graber 1963	1				1	1	1						

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

Armstrong and Noakes 1981 — 1 = < 30%, 2 = 30-60%, and 3 = >60 % frequency of occurence of food type in stomach

Corn

* = during winter almost entirely dependent on corn from corn cribs and feedlots.

Basore et al. 1986 — 1 = <10, 2 = 10-50, and 3 = >50 nests/100 ha.

Castrale 1986 — # = percentage of surveys on which species was detected (summer N = 140, winter N = 180)

HABITAT: Corn/Maïs

Fischl and Cacamise 1985	1 = -1 to < 0, 2 = 0 to 0.5 (E* values)
	E* is the Relativized Electivity Index based on O'Neil's selectivity coefficient Wi (O'Neil 1969). Values approach +1 when habitats are used in proportions greater than their abundance, and -1 when they are used in proportions less than their abundance.
Graber and Graber 1963	1 = <10, 2 = 10-50, and 3 = >50 birds/100 ha
	* - listed as Meadowlark species, may be Eastern Meadowlark, Western Meadowlark or both.
Hunt & Bell 1973	# - percentage of damage claims in Wisconsin (1965-1973), attributable to crop
	'Spring' = March, April and May 'Fall' = September, October and November
Johnson and Caslick 1982	1 = <30%, 2 = 30-60%, and 3 = >60% utilization
Kahl & Samson 1984	1 = <20 and 3 = >40 preference value
	Preference value expressed as the % total geese observed in a field type divided by the total agricultural area of that type.
McNeil et al. 1976	1 = <30%, 2 = 30-60% et 3 = >60% utilisation
Potvin et al. 1976	1 = <30%, 2 = 30-60% et 3 = >60% fréquence d'apparition du type de nourriture dans le gésier
	Maïs * - on pense qu'il pourrait avoir été consommé en majeure partie dans des parcs d'engraissement, non dans les champs
Rodenhouse & Best 1983	1 = <30 pairs/40 ha

HABITAT: Corn/Maiz

Somers et al. 1981	1 = <30, 2 = 30 -60, and 3 = >60 % of birds using habitat
Westmoreland & Woolf 1984	3 = >6 frequency mean.
Williams & Batzli 1979	1 = <10, 2 = 10-40, and 3 = >40 % of food found in stomach

HABITAT: Corn-Notill/Maïs-Semis Direct

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Northern Bobwhite	Castrale 1986						15	15						Colin de Virginie
Killdeer	Castrale 1986						1	1						Pluvier kildir
Rock Dove	Castrale 1986						<1	<1						Pigeon biset
Mourning Dove	Castrale 1986						24	24						Tourterelle triste
Chimney Swift	Castrale 1986						5	5						Martinet ramoneur
Eastern Phoebe	Castrale 1986						2	2						Moucherolle phébi
Eastern Kingbird	Castrale 1986						2	2						Tyran tritri
Horned Lark	Castrale 1986						1	1						Alouette cornue
Purple Martin	Castrale 1986						5	5						Hirondelle noire
Barn Swallow	Castrale 1986						28	28						Hirondelle des granges
American Crow	Castrale 1986						1	1						Corneille d'Amérique
Eastern Bluebird	Castrale 1986						7	7						Merle bleu de l'Est
American Robin	Castrale 1986						5	5						Merle d'Amérique
Northern Mockingbird	Castrale 1986						1	1						Moqueur polyglotte
Brown Thrasher	Castrale 1986						2	2						Moqueur roux
European Starling	Castrale 1986						16	16						Etourneau sansonnet
Common Yellowthroat	Castrale 1986						2	2						Paruline masquée
Northern Cardinal	Castrale 1986						10	10						Cardinal rouge
Indigo Bunting	Castrale 1986						14	14						Passerin indigo
Field Sparrow	Castrale 1986						18	18						Bruant des champs
Grasshopper Sparrow	Castrale 1986						8	8						Bruant sauterelle
Song Sparrow	Castrale 1986						9	9						Bruant chanteur
Red-winged Blackbird	Castrale 1986						38	38						Carouge à épaulettes
Eastern Meadowlark	Castrale 1986						32	32						Sturnelle des prés
Common Grackle	Castrale 1986						17	17						Quiscale bronzé
American Goldfinch	Castrale 1986						2	2						Chardonneret jaune
House Sparrow	Castrale 1986						<1	<1						Moineau domestique

HABITAT: Corn-Notill/Maïs-Semis Direct

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

Castrale 1986 # = percentage of surveys on which species was detected (summer N = 140, winter N = 180)

HABITAT: Corn-Notill Corn/Maïs-Semis Direct Sur Maïs

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Ring-necked Pheasant	Basore et al. 1986					N1	N1	N1						Faisan de chasse
Killdeer	Basore et al. 1986					N1	N1	N1						Pluvier kildir
Mourning Dove	Basore et al. 1986							N1						Tourterelle triste
American Robin	Basore et al. 1986						N1	N1						Merle d'Amérique
Vesper Sparrow	Basore et al. 1986							N1						Bruant vespéral
Red-winged Blackbird	Basore et al. 1986						N1	N1						Carouge à épaulettes
Brown-headed Cowbird	Basore et al. 1986							N1						Vacher à tête brune

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

Basore et al. 1986 1 = <10, 2 = 10-50, and 3 = >50 nests/100 ha.

HABITAT: Corn-Hotill Sod/Maïs-Semis Direct Sus Gazon

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Ring-necked Pheasant	Basore et al. 1986						N1	N1	N1					Faisan de chasse
Killdeer	Basore et al. 1986					N1	N1	N1						Pluvier kildir
Mourning Dove	Basore et al. 1986								N1					Tourterelle triste
Vesper Sparrow	Basore et al. 1986								N1					Bruant vespéral
Savannah Sparrow	Basore et al. 1986						N1	N1						Bruant des prés
Grasshopper Sparrow	Basore et al. 1986						N2	N2						Bruant sauterelle
Bobolink	Basore et al. 1986						N1	N1						Goglu
Western Meadowlark	Basore et al. 1986						N2	N2	N2					Sturnelle de l'Ouest
Brown-headed Cowbird	Basore et al. 1986						N2	N2						Vacher à tête brune

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

Basore et al. 1986 1 = <10, 2 = 10-50, and 3 = >50 nests/100 ha.

HABITAT: Corn-Sprouting/Maïs-Germes

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Ring-necked Pheasant	Ingram et al. 1973					F1	F1							Faisan de chasse
Killdeer	Ingram et al. 1973					+	+							Pluvier kildir
Mourning Dove	Ingram et al. 1973					+	+							Tourterelle triste
Northern Flicker	Ingram et al. 1973					+	+							Pic flamboyant
Eastern Kingbird	Ingram et al. 1973					+	+							Tyran tritri
Blue Jay	Ingram et al. 1973					+	+							Geai bleu
American Crow	Ingram et al. 1973					F1	F1							Corneille d'Amérique
Wood Thrush	Ingram et al. 1973					+	+							Grive des bois
American Robin	Ingram et al. 1973					+	+							Merle d'Amérique
European Starling	Ingram et al. 1973					+	+							Etourneau sansonnet
Red-winged Blackbird	Ingram et al. 1973					F3	F3							Carouge à épaulettes
Eastern Meadowlark	Ingram et al. 1973					+	+							Sturnelle des près
Common Grackle	Rogers & Lineham 1977				F									Quiscale bronzé
	Ingram et al. 1973					F2	F2							
Brown-headed Cowbird	Ingram et al. 1973					F2	F2							Vacher à tête brune

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

Ingram et al. 1973 1 = <0.30, 2 = 0.30-0.60, and 3 = 0.61-1.0 maximum average birds/field/day

HABITAT: Corn-Stubble/Maïs-Chaume

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Canada Goose	Reed et al. 1977			F2	F2	F1								Bernache du Canada
	Hunt & Bell 1973			F43	F43	F43								
Turkey Vulture	Castrale 1986	1	1											Urubu à tête rouge
Red-tailed Hawk	Castrale 1986	2	2											Buse à queue rousse
American Kestrel	Castrale 1986	2	2											Crécerelle d'Amérique
Northern Bobwhite	Castrale 1986	2	2											Colin de Virginie
Killdeer	Castrale 1986	<1	<1											Pluvier kildir
Mourning Dove	Castrale 1986	17	17											Tourterelle triste
Red-bellied Woodpecker	Castrale 1986	1	1											Pic à ventre roux
Downy Woodpecker	Castrale 1986	3	3											Pic mineur
Northern Flicker	Castrale 1986	4	4											Pic flamboyant
Horned Lark	Castrale 1986	3	3											Alouette cornue
Blue Jay	Castrale 1986	3	3											Geai bleu
American Crow	Castrale 1986	11	11											Corneille d'Amérique
Eastern Tufted Titmouse	Castrale 1986	1	1											Mésange bicolore
Eastern Bluebird	Castrale 1986	7	7											Merle bleu de l'Est
American Robin	Castrale 1986	<1	<1											Merle d'Amérique
European Starling	Castrale 1986	4	4											Etourneau sansonnet
Northern Cardinal	Castrale 1986	11	11											Cardinal rouge
Rufous-sided Towhee	Castrale 1986	1	1											Tohi à flancs roux
American Tree Sparrow	Castrale 1986	2	2											Bruant hudsonien
Song Sparrow	Castrale 1986	11	11											Bruant chanteur
White-throated Sparrow	Castrale 1986	1	1											Bruant à gorge blanche
Dark-eyed Junco	Castrale 1986	16	16											Junco ardoisé
Red-winged Blackbird	Castrale 1986	2	2											Carouge à épaulettes
	Johnson & Caslick 1982									F1	F1	F1		
Eastern Meadowlark	Castrale 1986	9	9											Sturnelle des prés
American Goldfinch	Castrale 1986	6	6											Chardonneret jaune

HABITAT: Corn-Stubble/Maïs-Chaume

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

Castrale 1986	% = percentage of surveys on which species was detected (summer N = 140, winter N = 180)
Hunt & Bell 1973	% = percentage of damage claims in Wisconsin (1965-1973), attributable to crop
	'Spring' = March, April and May
Johnson and Caslick 1982	1 = <30%, 2 = 30-60%, and 3 = >60% utilization
Reed et al. 1977	1 = <1, 2 = 1-2, and 3 = >3 index of usage
	An index of usage (% geese divided by % of acreage) of 1 indicates that a particular field type was used in exact proportion to its availability; >1 indicates it was used more than expected on the basis of its acreage; <1 less than expected.

HABITAT: Crabapples/Pommetiers

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
American Robin	Pietz & Pietz 1987				F									Merle d'Amérique
Cedar Waxwing	Pietz & Pietz 1987				F									Jaseur des cèdres

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

HABITAT: Ditches/Fossés

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Français commun
Killdeer	McNeil et al. 1976							+	+	+	+			Pluvier kildir
Song Sparrow	Ashton & Jackson 1983					T	T							Bruant chanteur
Red-winged Blackbird	Ashton & Jackson 1983					N	N							Carouge à épaulettes
	McNeil et al. 1976			+	+	+	N							
Present, Season Not Specified														Présent, Saison Non Précisée
Great Blue Heron	McNeil et al. 1976													Grand Héron
Wood Duck	McNeil et al. 1976													Canard branchu
American Green-winged Teal	McNeil et al. 1976													Sarcelle à ailes vertes
Mallard	McNeil et al. 1976													Canard colvert
Blue-winged Teal	McNeil et al. 1976													Sarcelle à ailes bleues
Northern Harrier	McNeil et al. 1976													Busard Saint-Martin
Red-tailed Hawk	McNeil et al. 1976													Buse à queue rousse
Rough-legged Hawk	McNeil et al. 1976													Buse pattue
Black-bellied Plover	McNeil et al. 1976													Pluvier argenté
Lesser Golden-plover	McNeil et al. 1976													Pluvier doré d'Amérique
Ring-billed Gull	McNeil et al. 1976													Goéland à bec cerclé
Herring Gull	McNeil et al. 1976													Goéland argenté
American Robin	McNeil et al. 1976													Merle d'Amérique
American Tree Sparrow	McNeil et al. 1976													Bruant hudsonien
Common Grackle	McNeil et al. 1976													Quiscale bronzé
American Goldfinch	McNeil et al. 1976													Chardonneret jaune

HABITAT: Ditches/Fossés

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

McNeil et al. 1976 1 = <30%, 2 = 30-60% et 3 = >60% utilisation

HABITAT: Fallow/Jachère

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
European Starling	Fischl & Cacamise 1985	F1	F1	F1	F3	F3	F3	F3	F3	F2	F2	F2	F1	Etourneau sansonnet
Eastern Meadowlark	Roseberry & Klimstra 1970					N1	N1	N1	N1	N1				Sturnelle des prés

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

Fischl and Cacamise 1985 1 = -1 to < 0, 2 = 0 to 0.5 (E* values)

E* is the Relativized Electivity Index based on O'Neil's selectivity coefficient Wi (O'Neil 1969). Values approach +1 when habitats are used in proportions greater than their abundance, and -1 when they are used in proportions less than their abundance.

Roseberry & Klimstra 1970 1 = <10, 2 =10-30, 3 =31-50, and 4 = >50 nests/100 ha

HABITAT: Feedlots/Parcs d'Engraissement

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
European Starling	Fischl & Cacamise 1985	F3	F3	F3	F3	F1	F1	F1	F1	F1	F1	F3	F3	Etourneau sansonnet

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

Fischl and Cacamise 1985 1 = -1 to < 0, 2 = 0 to 0.5 (E* values)

E* is the Relativized Electivity Index based on O'Neil's selectivity coefficient Wi (O'Neil 1969). Values approach +1 when habitats are used in proportions greater than their abundance, and -1 when they are used in proportions less than their abundance.

HABITAT: Fencerows/Clôtures

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Northern Goshawk	Wegner 1976					+	+	+	+	+	+			Autour des palombes
Red-tailed Hawk	Wegner 1976					+	+	+	+	+	+			Buse à queue rousse
American Kestrel	Wegner 1976					+	+	+	+	+	+			Crécerelle d'Amérique
Merlin	Wegner 1976					+	+	+	+	+	+			Faucon émerillon
Ruby-throated Hummingbird	Wegner 1976					+	+	+	+	+	+			Colibri à gorge rubis
Red-headed Woodpecker	Wegner 1976					+	+	+	+	+	+			Pic à tête rouge
Downy Woodpecker	Wegner 1976					+	+	+	+	+	+			Pic mineur
Hairy Woodpecker	Wegner 1976					+	+	+	+	+	+			Pic chevelu
Northern Flicker	Wegner 1976					+	+	+	+	+	+			Pic flamboyant
Pileated Woodpecker	Wegner 1976					+	+	+	+	+	+			Grand Pic
Eastern Wood-pewee	Wegner 1976					+	+	+	+	+	+			Pioui de l'Est
Least Flycatcher	Wegner 1976					+	+	+	+	+	+			Moucherolle tchébec
Eastern Phoebe	Wegner 1976					+	+	+	+	+	+			Moucherolle phébi
Great-crested Flycatcher	Wegner 1976					+	+	+	+	+	+			Tyran huppé
Eastern Kingbird	Wegner 1976					+	+	+	+	+	+			Tyran tritri
Tree Swallow	Wegner 1976					+	+	+	+	+	+			Bruant hudsonien
Blue Jay	Wegner 1976					+	+	+	+	+	+			Geai bleu
American Crow	Wegner 1976					+	+	+	+	+	+			Corneille d'Amérique
Black-capped Chickadee	Wegner 1976					+	+	+	+	+	+			Mésange à tête noire
Red-breasted Nuthatch	Wegner 1976					+	+	+	+	+	+			Sittelle à poitrine rousse
White-breasted Nuthatch	Wegner 1976					+	+	+	+	+	+			Sittelle à poitrine blanche
Brown Creeper	Wegner 1976					+	+	+	+	+	+			Grimpereau brun
House Wren	Wegner 1976					+	+	+	+	+	+			Troglodyte familier
Veery	Wegner 1976					+	+	+	+	+	+			Grive fauve
Gray-cheeked Thrush	Wegner 1976					+	+	+	+	+	+			Grive à joues grises
Swainson's Thrush	Wegner 1976					+	+	+	+	+	+			Grive à dos olive
Hermit Thrush	Wegner 1976					+	+	+	+	+	+			Bruant de Henslow

HABITAT: Fencerows/Clôtures

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Wood Thrush	Wegner 1976					+	+	+	+	+	+			Grive des bois
American Robin	Wegner 1976					+	+	+	+	+	+			Merle d'Amérique
Water Pipit	Wegner 1976					+	+	+	+	+	+			Pipit spioncelle
Northern Shrike	Wegner 1976					+	+	+	+	+	+			Pie-grièche grise
European Starling	McNeil et al. 1976					N	N							Etourneau sansonnet
	Wegner 1976					+	+	+	+	+	+			
Red-eyed Vireo	Wegner 1976					+	+	+	+	+	+			Viréo aux yeux rouges
Nashville Warbler	Wegner 1976					+	+	+	+	+	+			Paruline à joues grises
Myrtle Warbler	Wegner 1976					+	+	+	+	+	+			Paruline triste
Scarlet Tanager	Wegner 1976					+	+	+	+	+	+			Tangara écarlate
Rose-breasted Grosbeak	Wegner 1976					+	+	+	+	+	+			Cardinal à poitrine rose
American Tree Sparrow	West 1967	F	F	F								F	F	Bruant hudsonien
Vesper Sparrow	Rodenhouse & Best 1983				FP1	FP1	FP1	F1	F1					Bruant vespéral
Savannah Sparrow	Wegner 1976					+	+	+	+	+	+			Bruant des prés
Song sparrow	Wegner 1976					+	+	+	+	+	+			Bruant chanteur
White-throated sparrow	Wegner 1976					+	+	+	+	+	+			Bruant à gorge blanche
Dark-eyed Junco	Wegner 1976					+	+	+	+	+	+			Junco ardoisé
Bobolink	Wegner 1976					+	+	+	+	+	+			Goglu
Red-winged Blackbird	McNeil et al. 1976					N								Carouge à épaulettes
	Wegner 1976					+	+	+	+	+	+			
Eastern Meadowlark	Wegner 1976					+	+	+	+	+	+			Sturnelle des prés
Rusty Blackbird	Wegner 1976					+	+	+	+	+	+			Quiscale rouilleux
Common Grackle	McNeil et al. 1976							P	P	P	P			Quiscale bronzé
Brown-headed Cowbird	Wegner 1976					+	+	+	+	+	+			Vacher à tête brune
Northern Oriole	Wegner 1976					+	+	+	+	+	+			Oriole du Nord
Common Redpoll	McNeil et al. 1976	+	+	+	+							+	+	Sizerin flammé

HABITAT: Fencerows/Clôtures

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
American Goldfinch	Wegner 1976					+	+	+	+	+	+			Chardonneret jaune
Evening Grosbeak	McNeil et al. 1976	+	+	+										Gros-bec errant
	Wegner 1976					+	+	+	+	+	+			
Present, Season Not Specified														Présent, Saison Non Précisée
Northern Harrier	McNeil et al. 1976													Busard Saint-Martin
Red-tailed Hawk	McNeil et al. 1976													Buse à queue rousse
Rough-legged Hawk	McNeil et al. 1976													Buse pattue
American Crow	McNeil et al. 1976													Corneille d'Amérique
American Robin	McNeil et al. 1976													Merle d'Amérique
Brown-headed Cowbird	McNeil et al. 1976													Vacher à tête brune
American Goldfinch	McNeil et al. 1976													Chardonneret jaune
House Sparrow	McNeil et al. 1976													Moineau domestique

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

McNeil et al. 1976 1 = <30%, 2 = 30-60% et 3 = >60% utilisation

Rodenhouse & Best 1983 1 = <30 pairs/40 ha

HABITAT: Fields-Tilled/Champs Labouré

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Turkey Vulture	Castrale 1986	3	3											Urubu à tête rouge
Red-tailed Hawk	Castrale 1986	<1	<1											Buse à queue rousse
American Kestrel	Caldwell 1986										PF			Crécerelle d'Amérique
	Castrale 1986	<1	<1											
Killdeer	Castrale 1986	4	4											Pluvier kildir
Rock Dove	Castrale 1986	<1	<1											Pigeon biset
Mourning Dove	Castrale 1986	3	3											Tourterelle triste
Horned Lark	Castrale 1986	15	15											Alouette cornue
Blue Jay	Castrale 1986	<1	<1											Geai bleu
American Crow	Castrale 1986	6	6											Corneille d'Amérique
Eastern Bluebird	Castrale 1986	7	7											Merle-bleu de l'Est
American Robin	Castrale 1986	1	1											Merle d'Amérique
European Starling	Castrale 1986	<1	<1											Etourneau sansonnet
Northern Cardinal	Castrale 1986	1	1											Cardinal rouge
Song sparrow	Castrale 1986	2	2											Bruant chanteur
White-throated Sparrow	Castrale 1986	1	1											Bruant à gorge blanche
Dark-eyed Junco	Castrale 1986	2	2											Junco ardoisé
Eastern Meadowlark	Castrale 1986	2	2											Sturnelle des prés
Present, Season Not Specified														Présent, Saison Non Précisée
Red-tailed Hawk	Caldwell 1986													Buse à queue rousse
Loggerhead Shrike	Caldwell 1986													Pie-grièche migatrice

HABITAT: Fields-Tilled/Champs Labouré

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

Castrale 1986 # = percentage of surveys on which species was detected (summer N = 140, winter N = 180)

HABITAT: Forest Edges/Lisières de Forets

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
American Robin	McNeil et al. 1976					F								Merle d'Amérique
Common Redpoll	McNeil et al. 1976	F	F	F	F							F	F	Sizerin flammé
Evening Grosbeak	McNeil et al. 1976	F	F	F								F	F	Gros-bec errant
Present, Season Not Specified														Présent, Saison Non Précisée
American Crow	McNeil et al. 1976													Corneille d'Amérique
Cedar Waxwing	McNeil et al. 1976													Jaseur des cèdres
European Starling	McNeil et al. 1976													Etourneau sansonnet
American Tree Sparrow	McNeil et al. 1976													Bruant hudsonien
Common Grackle	McNeil et al. 1976													Quiscale bronzé
Brown-headed Cowbird	McNeil et al. 1976													Vacher à tête brune
American Goldfinch	McNeil et al. 1976													Chardonneret jaune
House Sparrow	McNeil et al. 1976													Moineau domestique

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

McNeil et al. 1976 1 = <30%, 2 = 30-60% et 3 = >60% utilisation

HABITAT: Grapes/Raisins

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Ring-necked Pheasant	Stevenson & Virgo 1971						+	+						Faisan de chasse
Mourning Dove	Stevenson & Virgo 1971						+	+						Tourterelle triste
Red-headed Woodpecker	Williams & Batzli 1979	F1	F1										F1	Pic à tête rouge
Red-breasted Sapsucker	Williams & Batzli 1979	F1	F1										F1	Pic à poitrine rouge
Downy Woodpecker	Williams & Batzli 1979	F1	F1										F1	Pic mineur
Northern Flicker	Stevenson & Virgo 1971						+	+						Pic flamboyant
	Jubb & Cunningham 1976									+	+			
White-breasted Nuthatch	Williams & Batzli 1979	F1	F1										F1	Sittelle à poitrine blanche
Swainson's Thrush	Jubb & Cunningham 1976									F	F			Grive à dos olive
American Robin	Stevenson & Virgo 1971						F2	F3						Merle d'Amérique
	Brown 1974								F	F	F			
	Jubb & Cunningham 1976									F	F			
Gray Catbird	Stevenson & Virgo 1971						+	+						Moqueur chat
	Jubb & Cunningham 1976									F	F			
Brown Thrasher	Jubb & Cunningham 1976									+	+			Moqueur roux
Cedar Waxwing	Stevenson & Virgo 1971						+	+						Jaseur des cèdres
	Jubb & Cunningham 1976									F	F			
European Starling	Stevenson & Virgo 1971						F2	F3						Etourneau sansonnet
	Jubb & Cunningham 1976									F	F			
Myrtle Warbler	Jubb & Cunningham 1976									+	+			Paruline à croupion jaune
Wilson's Warbler	Jubb & Cunningham 1976									+	+			Paruline à calotte noire
Scarlet Tanager	Jubb & Cunningham 1976									+	+			Tangara écarlate
Northern Cardinal	Jubb & Cunningham 1976									F	F			Cardinal rouge
Chipping Sparrow	Jubb & Cunningham 1976									+	+			Bruant familier
Savannah Sparrow	Jubb & Cunningham 1976									+	+			Bruant des prés
Song Sparrow	Jubb & Cunningham 1976									F	F			Bruant chanteur
White-throated Sparrow	Jubb & Cunningham 1976									+	+			Bruant à gorge blanche

HABITAT: Grapes/Raisins

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Dark-eyed Junco	Jubb & Cunningham 1976									+	+			Junco ardoisé
Bobolink	Stevenson & Virgo 1971						+	+						Goglu
Eastern Meadowlark	Stevenson & Virgo 1971						+	+						Sturnelle des prés
Common Grackle	Stevenson & Virgo 1971						+	+						Quiscale bronzé
	Jubb & Cunningham 1976									+	+			
Brown-headed Cowbird	Jubb & Cunningham 1976									+	+			Vacher à tête brune
Northern Oriole	Stevenson & Virgo 1971						+	+						Oriole du Nord
	Brown 1974								F	F	F			
American Goldfinch	Stevenson & Virgo 1971						+	+						Chardonneret jaune
House Sparrow	Jubb & Cunningham 1976									+	+			Moineau domestique

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

Brown 1974 — 1 = <0.5, 2 = 0.5-3.0, and 3 = >3.0 mean no. visits per 15 min

Stevenson & Virgo 1971 — 2 = 30-60, and 3 = >60 birds observed

Williams & Batzli 1979 — 1 = <10, 2 = 10-40, and 3 = >40 % of food found in stomach

HABITAT: Grasslands/Prairies

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Canada Goose	Kahl & Samson 1984	F1	F1	F1	F1						F1			Bernache du Canada
	Reed et al. 1977			F1	F1	F3								
European Starling	Potvin et al. 1976							F1	F1	F1				Etourneau sansonnet
Eastern Meadowlark	Rosebery & Klimstra 1970					N2	N2	N2	N2	N2				Sturnelle des prés
Present, Season Not Specified														Présent, Saison Non Précisée
Northern Harrier	McNeil et al. 1976													Busard Saint-Martin
Lesser Golden-plover	McNeil et al. 1976													Pluvier doré d'Amérique
Killdeer	McNeil et al. 1976													Pluvier kildir
Upland Sandpiper	McNeil et al. 1976													Maubèche des champs
	McNeil et al. 1976													
Common Barn-owl	Colvin 1985													Effraie des clochers
Bobolink	McNeil et al. 1976													Goglu
Eastern Meadowlark	McNeil et al. 1976													Sturnelle des prés
Brown-headed Cowbird	McNeil et al. 1976													Vacher à tête brune

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

Kahl & Samson 1984

1 = <20 and 3 = >40 preference value

Preference value expressed as the % total geese observed in a field type divided by the total agricultural area of that type.

McNeil et al. 1976	1 = <30%, 2 = 30-60% et 3 = >60% utilisation
Potvin et al. 1976	1 = <30%, 2 = 30-60% et 3 = >60% fréquence d'apparition du type de nourriture dans le gésier
Reed et al. 1977	1 = <1, 2 = 1-2, and 3 = >3 index of usage An index of usage (% geese divided by % of acreage) of 1 indicates that a particular field type was used in exact proportion to its availability; >1 indicates it was used more than expected on the basis of its acreage; <1 less than expected.
Rosaberry & Klimstra 1970	1 = <10, 2 =10-30, 3 =31-50, and 4 = >50 nests/100 ha

HABITAT: Hay/Foin

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Français commun
Snow Goose	Bedard et al. 1986				F3	F3								Oie des neiges
American Kestrel	Graber & Graber 1963					1	1	1						Crécerelle d'Amérique
Ring-necked Pheasant	Graber & Graber 1963					N1	N1	N1						Faisan de chasse
	Warnock & Joselyn 1964						N3	N3	N3					
Northern Bobwhite	Graber & Graber 1963					N1	N1	N1						Colin de Virginie
Black-bellied Plover	McNeil et al. 1976								+	+	+			Pluvier argenté
Lesser Golden-plover	McNeil et al. 1976								+	+	+			Pluvier doré d'Amérique
Killdeer	Graber & Graber 1963					1	1	1						Pluvier kildir
	McNeil et al. 1976							+	+	+	+			
Upland Sandpiper	Graber & Graber 1963					N1	N1	N1						Maubèche des champs
	McNeil et al. 1976					N	N	N	F	F	F			
Black Tern	Graber & Graber 1963					1	1	1						Guifette noire
Mourning Dove	Graber & Graber 1963					1	1	1						Tourterelle triste
	McNeil et al. 1976								F					
Common Nighthawk	Graber & Graber 1963					1	1	1						Engoulevent d'Amérique
Ruby-throated Hummingbird	Graber & Graber 1963					1	1	1						Colibri à gorge rubis
Red-headed Woodpecker	Graber & Graber 1963					1	1	1						Pic à tête rouge
Northern Flicker	Graber & Graber 1963					1	1	1						Pic flamboyant
Eastern Kingbird	Graber & Graber 1963					1	1	1						Tyran tritri
Horned Lark	Graber & Graber 1963					1	1	1						Alouette cornue
Purple Martin	Graber & Graber 1963					1	1	1						Hirondelle noire
Barn Swallow	Graber & Graber 1963					1	1	1						Hirondelle des granges
American Crow	McNeil et al. 1976						N	N						Corneille d'Amérique
Sedge Wren	Graber & Graber 1963					N1	N1	N1						Troglodyte à bec court
American Robin	Graber & Graber 1963					1	1	1						Merle d'Amérique
Gray Catbird	Graber & Graber 1963					1	1	1						Moqueur chat
Northern Mockingbird	Graber & Graber 1963					1	1	1						Moqueur polyglotte

HABITAT: Hay/Foin

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Brown Thrasher	Graber & Graber 1963					1	1	1						Moqueur roux
Water Pipit	McNeil et al. 1976										+			Pipit spioncelle
European Starling	Graber & Graber 1963					1	1	1						Etourneau sansonnet
	McNeil et al. 1976							F3	F1	F2	F1			
Common Yellowthroat	Graber & Graber 1963					1	1	1						Paruline masquée
Indigo Bunting	Graber & Graber 1963					1	1	1						Passerin indigo
Field Sparrow	Graber & Graber 1963					1	1	1						Bruant des champs
Vesper Sparrow	Graber & Graber 1963					N1	N1	N1						Bruant vespéral
Savannah Sparrow	Graber & Graber 1963					N2	N2	N2						Bruant des prés
Grasshopper Sparrow	Graber & Graber 1963					N2	N2	N2						Bruant sauterelle
Song Sparrow	Graber & Graber 1963					1	1	1						Bruant chanteur
Swamp Sparrow	Graber & Graber 1963					1	1	1						Bruant des marais
Snow Bunting	McNeil et al. 1976	+	+	+							+	+	+	Bruant des neiges
Bobolink	Graber & Graber 1963					N3	N3	N3						Goglu
	McNeil et al. 1976					N	N	N						
Red-winged Blackbird	Graber & Graber 1963					N3	N3	N3						Carouge à épaulettes
	Johnson & Caslick 1982							F1	F1	F1	F1	F1		
	McNeil et al. 1976			+	+	+	N	F2	F1		F1			
	Somers et al. 1981							F1	F1					
Eastern Meadowlark *	Graber & Graber 1963					N2	N2	N2						Sturnelle des prés *
	McNeil et al. 1976							F						
	Rosebery & Klimstra 1970					N3	N3	N3	N3	N3				
Common Grackle	Graber & Graber 1963					2	2	2						Quiscale bronzé
	McNeil et al. 1976			F	F	F	F	F3	F1					
Brown-headed Cowbird	Graber & Graber 1963					N1	N1	N1						Vacher à tête brune
	McNeil et al. 1976							F1	F1					
American Goldfinch	Graber & Graber 1963					1	1	1						Chardonneret jaune

HABITAT: Hay/Foin

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
American Goldfinch	McNeil et al. 1976						+	+						Chardonneret jaune
House Sparrow	Graber & Graber 1963					2	2	2						Moineau domestique
Present, Season Not Specified														Présent, Saison Non Précisée
Northern Harrier	McNeil et al. 1976													Busard Saint-Martin
Ring-billed Gull	McNeil et al. 1976													Goéland à bec cerclé
American Robin	McNeil et al. 1976													Merle d'Amérique
House Sparrow	McNeil et al. 1976													Moineau domestique

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

Bedard et al. 1986 — 3 = >40 stations with >1 droppings m-2

Graber and Graber 1963 — 1 = <10, 2 = 10-50, and 3 = >50 birds/100 ha

* - listed as Meadowlark species, may be Eastern Meadowlark, Western Meadowlark or both.

Johnson and Caslick 1982 — 1 = <30%, 2 = 30-60%, and 3 = >60% utilization

McNeil et al. 1976 — 1 = <30%, 2 = 30-60% et 3 = >60% utilisation

HABITAT: Lakes & Ponds/Lacs & Etangs

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
American Green-winged Teal	McNeil et al. 1976				+	+				+	+	+		Sarcelle à ailes verte
Mallard	McNeil et al. 1976				+	+				+	+	+		Canard colvert
Northern Pintail	McNeil et al. 1976				+	+				+	+	+		Canard pilet
Blue-winged Teal	McNeil et al. 1976				+	+				+	+	+		Sarcelle à ailes bleues
Red-winged Blackbird	McNeil et al. 1976			N										Carouge à épaulettes
Present, Season Not Specified														Présent, Saison Non Précisée
Great Blue Heron	McNeil et al. 1976													Grand Héron
Osprey	McNeil et al. 1976													Balbuzard
Killdeer	McNeil et al. 1976													Pluvier kildir
Ring-billed Gull	McNeil et al. 1976													Goéland à bec cerclé
Herring Gull	McNeil et al. 1976													Goéland argenté
Belted Kingfisher	McNeil et al. 1976													Martin-pêcheur d'Amérique
Purple Martin	McNeil et al. 1976													Hirondelle noire
Tree Swallow	McNeil et al. 1976													Hirondelle bicolore
Bank Swallow	McNeil et al. 1976													Hirondelle de rivage
Barn Swallow	McNeil et al. 1976													Hirondelle des granges
American Robin	McNeil et al. 1976													Merle d'Amérique
Water Pipit	McNeil et al. 1976													Pipit spioncelle

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

McNeil et al. 1976 1 = <30%, 2 = 30-60% et 3 = >60% utilisation

HABITAT: Marshes & Bogs/Marais & Tourbières

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Tree Swallow	McNeil et al. 1976								R	R				Hirondelle bicolore
European Starling	Fischl & Cacamise 1985	F1	F1	F1	F1	F1	F1	F1	F1	F1	F1	F1	F1	Etourneau sansonnet
Red-winged Blackbird	McNeil et al. 1976			+	+	+	N	R	R	R	R			Carouge à épaulettes
Present, Season Not Specified														Présent, Saison Non Précisée
Northern Harrier	McNeil et al. 1976													Busard Saint-Martin
Rough-legged Hawk	McNeil et al. 1976													Buse pattue
Bank Swallow	McNeil et al. 1976													Hirondelle de rivage
Cliff Swallow	McNeil et al. 1976													Hirondelle à front blanc
Barn Swallow	McNeil et al. 1976													Hirondelle des granges
European Starling	McNeil et al. 1976													Etourneau sansonnet

W15A

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

Fischl and Cacamise 1985 1 = -1 to < 0, 2 = 0 to 0.5 (E* values)

E* is the Relativized Electivity Index based on O'Neil's selectivity coefficient Wi (O'Neil 1969). Values approach +1 when habitats are used in proportions greater than their abundance, and -1 when they are used in proportions less than their abundance.

McNeil et al. 1976 1 = <30%, 2 = 30-60% et 3 = >60% utilisation

HABITAT: Mulberries/Mûriers

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Eastern Bluebird	Pinowski 1977						F	F	F					Merle-bleu de l'Est
American Robin	Brown 1974						F	F	F					Merle d'Amérique
European Starling	Brown 1974						F	F	F					Etourneau sansonnet

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

Brown 1974 1 = <0.5, 2 = 0.5-3.0, and 3 = >3.0 mean no. visits per 15 min

HABITAT: Oats/Avoine

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Canada Goose	Hunt & Bell 1973			F*	F*	F*								Bernache du Canada
American Kestrel	Graber & Graber 1963					1	1	1						Crécerelle d'Amérique
Ring-necked Pheasant	Graber & Graber 1963					N1	N1	N1						Faisan de chasse
Northern Bobwhite	Graber & Graber 1963					1	1	1						Colin de Virginie
Killdeer	Graber & Graber 1963					1	1	1						Pluvier kildir
Upland Sandpiper	Graber & Graber 1963					1	1	1						Maubèche des champs
Ring-billed Gull	McNeil et al. 1976									F	F			Goéland à bec cerclé
Rock Dove	Potvin et al. 1976							F2						Pigeon biset
Mourning Dove	Graber & Graber 1963					1	1	1						Tourterelle triste
Chimney Swift	Graber & Graber 1963					1	1	1						Martinet ramoneur
Northern Flicker	Graber & Graber 1963					1	1	1						Pic flamboyant
Eastern Kingbird	Graber & Graber 1963					1	1	1						Tyran tritri
Horned Lark	Ashton & Jackson 1983					+	+							Alouette cornue
	Graber & Graber 1963					N1	N1	N1						
Purple Martin	Graber & Graber 1963					1	1	1						Hirondelle noire
Barn Swallow	Graber & Graber 1963					1	1	1						Hirondelle des granges
American Crow	McNeil et al. 1976									F	F			Corneille d'Amérique
American Robin	Graber & Graber 1963					1	1	1						Merle d'Amérique
Loggerhead Shrike	Graber & Graber 1963					1	1	1						Pie-grièche migatrice
European Starling	Graber & Graber 1963					1	1	1						Etourneau sansonnet
	Potvin et al. 1976								F1	F1				
	McNeil et al. 1976								F1	F1	F1			
Northern Cardinal	Graber & Graber 1963					1	1	1						Cardinal rouge
Indigo Bunting	Graber & Graber 1963					1	1	1						Passerin indigo
Vesper Sparrow	Ashton & Jackson 1983					+	+							Bruant vespéral
Grasshopper Sparrow	Graber & Graber 1963					N1	N1	N1						Bruant sauterelle
Bobolink	McNeil et al. 1976					+	+	+	+	+				Goglu

HABITAT: Oats/Avoine

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Bobolink	Graber & Graber 1963					N2	N2	N2						Goglu
Red-winged Blackbird	Somers et al. 1981							F2	F1					Carouge à épaulettes
	Johnson & Caslick 1982							F2	F2					
	McNeil et al. 1976							F1	F2					
	Graber & Graber 1963					N2	N2	N2						
Eastern Meadowlark *	Graber & Graber 1963					N1	N1	N1						Sturnelle des prés *
Common Grackle	Potvin et al. 1976							F1	F1	F1				Quiscale bronzé
	Graber & Graber 1963					1	1	1						
	McNeil et al. 1976								F3	F3				
Brown-headed Cowbird	McNeil et al. 1976			F	F	F	F	F1	F1					Vacher à tête brune
American Goldfinch	Graber & Graber 1963					1	1	1						Chardonneret jaune
House Sparrow	Graber & Graber 1963					2	2	2						Moineau domestique
Present, Season Not Specified														Présent, Saison Non Précisée
Horned Lark	McNeil et al. 1976													Alouette cornue
House Sparrow	McNeil et al. 1976													Moineau domestique

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

Graber and Graber 1963 1 = <10, 2 = 10-50, and 3 = >50 birds/100 ha

* - listed as Meadowlark species, may be Eastern Meadowlark, Western Meadowlark or both.

HABITAT: Oats/Avoine

Hunt & Bell 1973	# - percentage of damage claims in Wisconsin (1965-1973), attributable to crop
	* - < 1% of damage claims in Wisconsin (1963-1973) attributable to crop.
	'Spring' - March, April and May
Johnson and Caslick 1982	1 = <30%, 2 = 30-60%, and 3 = >60% utilization
McNeil et al. 1976	1 = <30%, 2 = 30-60% et 3 = >60% utilisation
Potvin et al. 1976	1 = <30%, 2 = 30-60% et 3 = >60% fréquence d'apparition du type de nourriture dans le gésier
Somers et al. 1981	1 = <30, 2 = 30 -60, and 3 = >60 % of birds using habitat

HABITAT: Old Fields/Terres de Culture Abandonnées

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Northern Harrier	Speirs & Orenstein 1967					+	+							Busard Saint-Martin
Killdeer	Speirs & Orenstein 1967					T1	T1							Pluvier kildir
Mourning Dove	McNeil et al. 1976								F					Tourterelle triste
Northern Flicker	Speirs & Orenstein 1967					T1	T1							Pic flamboyant
Eastern Kingbird	Speirs & Orenstein 1967					+	+							Tyran tritri
Horned Lark	Speirs & Orenstein 1967					+	+							Alouette cornue
Barn Swallow	Speirs & Orenstein 1967					+	+							Hirondelle des granges
Eastern Bluebird	Pinowski 1977			F	F	F	F	F	F					Merle-bleu de l'Est
American Robin	Speirs & Orenstein 1967					F1	F1							Merle d'Amérique
Cedar Waxwing	Speirs & Orenstein 1967					+	+							Jaseur des cedres
European Starling	Fischl & Cacamise 1985	F1	F1	F1	F1	F1	F1	F1	F1	F2	F2	F2	F1	Etourneau sansonnet
	Speirs & Orenstein 1967					+	+							
American Tree Sparrow	McNeil et al. 1976			F	F	F					F	F		Bruant hudsonien
Vesper Sparrow	Speirs & Orenstein 1967					+	+							Bruant vespéral
Savannah Sparrow	Speirs & Orenstein 1967					T3	T3							Bruant des prés
Henslow's Sparrow	Speirs & Orenstein 1967					T1	T1							Bruant de Henslow
Song Sparrow	Speirs & Orenstein 1967					T2	T2							Bruant chanteur
Snow Bunting	McNeil et al. 1976	F	F	F							F	F	F	Bruant des neiges
Bobolink	McNeil et al. 1976					+	+	+	+	+				Goglu
	Speirs & Orenstein 1967					T2	T2							
Red-winged Blackbird	Johnson & Caslick 1982							F1	F1	F2		F1		Carouge à épaulettes
	Somers et al. 1981							F1	F1					
	Speirs & Orenstein 1967					T2	T2							
Eastern Meadowlark	Speirs & Orenstein 1967					T1	T1							Sturnelle des prés
Common Grackle	Speirs & Orenstein 1967					+	+							Quiscale bronzé
Brown-headed Cowbird	Speirs & Orenstein 1967					+	+							Vacher à tête brune
Common Redpoll	McNeil et al. 1976	F	F	F	F							F	F	Sizerin flammé

HABITAT: Old Fields/Terres de Culture Abandonnées

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
American Goldfinch	McNeil et al. 1976							F	F	F	F			Chardonneret jaune
	Speirs & Orenstein 1967					+	+							
Present, Season Not Specified														Présent, Saison Non Précisée
Northern Harrier	McNeil et al. 1976													Busard Saint-Martin
Red-tailed Hawk	McNeil et al. 1976													Buse à queue rousse
Rough-legged Hawk	McNeil et al. 1976													Buse pattue
American Crow	McNeil et al. 1976													Corneille d'Amérique
Water Pipit	McNeil et al. 1976													Pipit spioncelle
European Starling	McNeil et al. 1976													Etourneau sansonnet
White-throated Sparrow	McNeil et al. 1976													Bruant à gorge blanche
Red-winged Blackbird	McNeil et al. 1976													Carouge à épaulettes
Eastern Meadowlark	McNeil et al. 1976													Sturnelle des près
Common Grackle	McNeil et al. 1976													Quiscale bronzé
Brown-headed Cowbird	McNeil et al. 1976													Vacher à tête brune
House Sparrow	McNeil et al. 1976													Moineau domestique

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

Fischl and Cacamise 1985 1 = -1 to < 0, 2 = 0 to 0.5 (E* values)

E* is the Relativized Electivity Index based on O'Neil's selectivity coefficient Wi (O'Neil 1969). Values approach +1 when habitats are used in proportions greater than their abundance, and -1 when they are used in proportions less than their abundance.

HABITAT: Old Fields/Terres de Cultures Abandonnées

Johnson and Caslick 1982	1 = <30%, 2 = 30-60%, and 3 = >60% utilization
McNeil et al. 1976	1 = <30%, 2 = 30-60% et 3 = >60% utilisation
Somers et al. 1981	1 = <30, 2 = 30 -60, and 3 = >60 % of birds using habitat
Speirs & Orenstein 1967	1 = <10, 2 = 10-30, and 3 = >30 birds/100 ha

HABITAT: Pastures/Pâturages

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Red-tailed Hawk	Wegner 1976					+	+	+	+	+	+			Buse à queue rousse
Ring-necked Pheasant	Warnock & Joselyn 1964						N3	N3	N3					Faisan de chasse
Black-bellied Plover	McNeil et al. 1976								+	+	+			Pluvier argenté
Lesser Golden-plover	McNeil et al. 1976								+	+	+			Pluvier doré d'Amérique
Killdeer	Speirs & Orenstein 1967						T1							Pluvier kildir
Upland Sandpiper	Speirs & Orenstein 1967						T1							Maubèche des champs
Ring-billed Gull	McNeil et al. 1976										+			Goéland à bec cerclé
Mourning Dove	Speirs & Orenstein 1967						F1							Tourterelle triste
Downy Woodpecker	Wegner 1976					+	+	+	+	+	+			Pic mineur
Hairy Woodpecker	Wegner 1976					+	+	+	+	+	+			Pic chevalu
Northern Flicker	Speirs & Orenstein 1967						F1							Pic flamboyant
	Wegner 1976					+	+	+	+	+	+			
Eastern Wood-pewee	Wegner 1976					+	+	+	+	+	+			Pioui de l'Est
Least Flycatcher	Wegner 1976					+	+	+	+	+	+			Moucherolle tchébec
Eastern Kingbird	Speirs & Orenstein 1967						F1							Tyran tritri
	Wegner 1976					+	+	+	+	+	+			
Horned Lark	Speirs & Orenstein 1967						T1							Alouette cornue
Tree Swallow	Wegner 1976					+	+	+	+	+	+			Bruant hudsonien
Blue Jay	Wegner 1976					+	+	+	+	+	+			Geai bleu
Red-breasted Nuthatch	Wegner 1976					+	+	+	+	+	+			Sittelle à poitrine rousse
Eastern Bluebird	Speirs & Orenstein 1967						F1							Merle-bleu de l'Est
Hermit Thrush	Wegner 1976					+	+	+	+	+	+			Grive solitaire
American Robin	McNeil et al. 1976				+	+	+	+						Merle d'Amérique
	Speirs & Orenstein 1967						F1							
	Wegner 1976					+	+	+	+	+	+			
Brown Thrasher	Speirs & Orenstein 1967						F1							Moqueur roux
Water Pipit	McNeil et al. 1976		+						+	+	+			Pipit spioncelle

HABITAT: Pastures/Pâturages

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Water Pipit	Wegner 1976					+	+	+	+	+	+			Pipit spioncelle
Cedar Waxwing	Speirs & Orenstein 1967						F1							Jaseur des cèdres
European Starling	Fischl & Cacamise 1985	F1	F2	F2	F2	F2	F2	F1	F2	F2	F2	F2	F1	Etourneau sansonnet
	McNeil et al. 1976			F	F	F		F1	F3	F2	F3			
	Speirs & Orenstein 1967						F1							
	Wegner 1976					+	+	+	+	+	+			
Chipping Sparrow	Speirs & Orenstein 1967						F1							Bruant familier
Vesper Sparrow	Speirs & Orenstein 1967						T2							Bruant vespéral
Savannah Sparrow	Speirs & Orenstein 1967						T1							Bruant des prés
	Wegner 1976					+	+	+	+	+	+			
Song Sparrow	Speirs & Orenstein 1967						T1							Bruant chanteur
	Wegner 1976					+	+	+	+	+	+			
Dark-eyed Junco	Gottfried & Franks 1975	F	F	F							F	F	F	Junco ardoisé
	Wegner 1976					+	+	+	+	+	+			
Snow Bunting	McNeil et al. 1976	+	+	+							+	+	+	Bruant des neiges
Bobolink	McNeil et al. 1976							+	+	+				Goglu
	Speirs & Orenstein 1967			—			T2							
	Wegner 1976					+	+	+	+	+	+			
Red-winged Blackbird	McNeil et al. 1976							F1	F1	F1	F3			Carouge à épaulettes
	Johnson & Caslick 1982								F1	F1		F1		
	Speirs & Orenstein 1967						T1							
	Wegner 1976					+	+	+	+	+	+			
Eastern Meadowlark	McNeil et al. 1976								F					Sturnelle des prés
	Speirs & Orenstein 1967						T1							
*	Rosebery & Klimstra 1970					N3	N3	N3	N3	N3				*
*	Rosebery & Klimstra 1970					N4	N4	N4	N4	N4				*
	Wegner 1976					+	+	+	+	+	+			

HABITAT: Pastures/Pâturages

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Common Grackle	McNeil et al. 1976				F	F	F	F1	F1	F	F			Quiscale bronzé
	Speirs & Orenstein 1967						F1							
Brown-headed Cowbird	McNeil et al. 1976			F	F	F	F	F3	F3	F3	F2			Vacher à tête brune
	Speirs & Orenstein 1967						+							
	Wegner 1976					+	+	+	+	+	+			
Northern Oriole	Wegner 1976					+	+	+	+	+	+			Oriole du Nord
American Goldfinch	Speirs & Orenstein 1967						F1							Chardonneret jaune
	Wegner 1976					+	+	+	+	+	+			
Present, Season Not Specified														Présent, Saison Non Précisée
Killdeer	McNeil et al. 1976													Pluvier kildir
Upland Sandpiper	McNeil et al. 1976													Maubèche des champs
Rock Dove	McNeil et al. 1976													Pigeon biset
American Crow	McNeil et al. 1976													Corneille d'Amérique
House Sparrow	McNeil et al. 1976													Moineau domestique

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

Johnson and Caslick 1982 1 = <30%, 2 = 30-60%, and 3 = >60% utilization

McNeil et al. 1976 1 = <30%, 2 = 30-60% et 3 = >60% utilisation

Roseberry & Klimstra 1970

1 = <10, 2 =10-30, 3 =31-50, and 4 = >50 nests/100 ha

* = ungrazed pasture
^ = grazed pasture

Speirs & Orenstein 1967

1 = <10, 2 = 10-30, and 3 = >30 birds/100 ha

Warnock & Joselyn 1964

2 = 10-50 and 3 = >50 nests/100 ha

HABITAT: Peaches/Pêchers

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
European Starling	Brown 1974								F					Etourneau sansonnet
Present, Season Not Specified														Présent, Saison Non Précisée
Ring-billed Gull	Blockpoel & Struger 1987													Goéland à bec cerclé

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

HABITAT: Peas/Pois

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Canada Goose	Hunt & Bell 1973			F*	F*	F*								Bernache du Canada

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

Hunt & Bell 1973

- percentage of damage claims in Wisconsin (1965-1973), attributable to crop

* - < 1% of damage claims in Wisconsin (1963-1973) attributable to crop.

'Spring' = March, April and May

HABITAT: Peas-Dry/Pois Secs

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Present, Season Not Specified														Présent, Saison Non Précisée
Canada Goose	McNeil et al. 1976													Bernache du Canada
Rock Dove	McNeil et al. 1976													Pigeon biset
Mourning Dove	McNeil et al. 1976													Tourterelle triste

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

McNeil et al. 1976 1 = <30%, 2 = 30-60% et 3 = >60% utilisation

HABITAT: Plums/Pruniers

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Present, Season Not Specified Ring-billed Gull	Blockpoel & Struger 1987													Présent, Saison Non Précisée Goéland à bec cerclé

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

HABITAT: Potatoes/Pommes de Terre

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Killdeer	Ashton & Jackson 1983					+	+							Pluvier kildir
Horned Lark	Ashton & Jackson 1983					+	+							Alouette cornue
Vesper Sparrow	Ashton & Jackson 1983					+	+							Bruant vespéral
Red-winged Blackbird	Ashton & Jackson 1983					T	T							Carouge à épaulettes

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

HABITAT: Rights-of-Way/Emprises

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Present, Season Not Specified														**Présent, Saison Non Précisée**
Mourning Dove	McNeil et al. 1976													Tourterelle triste
American Robin	McNeil et al. 1976													Merle d'Amérique
Snow Bunting	McNeil et al. 1976													Bruant des neiges
Common Redpoll	McNeil et al. 1976													Sizerin flammé
American Goldfinch	McNeil et al. 1976													Chardonneret jaune
Evening Grosbeak	McNeil et al. 1976													Gros-bec errant

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

McNeil et al. 1976 1 = <30%, 2 = 30-60% et 3 = >60% utilisation

HABITAT: Rivers/Rivières

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Indigo Bunting	Ashton & Jackson 1983					T	T							Passerin indigo
Present, Season Not Specified														Présent, Saison Non Précisée
Great Blue Heron	McNeil et al. 1976													Grand Héron
Canada Goose	McNeil et al. 1976													Bernache du Canada
Wood Duck	McNeil et al. 1976													Canard branchu
American Green-winged Teal	McNeil et al. 1976													Sarcelle à ailes vertes
American Black Duck	McNeil et al. 1976													Canard noir
Mallard	McNeil et al. 1976													Canard colvert
Northern Pintail	McNeil et al. 1976													Canard pilet
Blue-winged Teal	McNeil et al. 1976													Sarcelle à ailes bleues
Northern Shoveler	McNeil et al. 1976													Canard souchet
Ring-necked Duck	McNeil et al. 1976													Morillon à collier
Black Scoter	McNeil et al. 1976													Macreuse à bec jaune
Bufflehead	McNeil et al. 1976													Petit Garrot
Hooded Merganser	McNeil et al. 1976													Bec-scie couronné
Red-breasted Merganser	McNeil et al. 1976													Bec-scie à poitrine rousse

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

McNeil et al. 1976 1 = <30%, 2 = 30-60% et 3 = >60% utilisation

HABITAT: Rye/Seigle

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Canada Goose	Hunt & Bell 1973									F*	F*	F*		Bernache du Canada
	Conover 1988	F	F	F								F	F	
Present, Season Not Specified														Présent, Saison Non Précisée
Mourning Dove	Armstrong & Noakes 1981													Tourterelle triste

F = Feeding N = Nesting + = Present, Activity Not Specified T = Territorial/Singing Male L = Loafing P = Perching R = Roosting

Armstrong and Noakes 1981 1 = < 30%, 2 = 30-60%, and 3 = >60 % frequency of occurence of food type in stomach

HABITAT: Shelterbelts/Rideaux-Abris

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
American Kestrel **	Yahner 1983				1	1	1	1	1	1	1	1		Crécerelle d'Amérique **
Ring-necked Pheasant ***	Yahner 1983	2	2	2	1	1	1	1	1	1	2	2	2	Faisan de chasse ***
Mourning Dove ***	Yahner 1983				3	3	3	3	3	3	2	2		Tourterelle triste ***
Downy Woodpecker **	Yahner 1983	1	1	1	1	1	1	1	1	1	1	1	1	Pic mineur **
Hairy Woodpecker *	Yahner 1983	1	1	1				1	1	1	1	1	1	Pic chevelu *
Northern Flicker **	Yahner 1983				1	1	1	2	2	2	1	1		Pic flamboyant **
Eastern Kingbird **	Yahner 1983				1	1	1	2	2	2	1	1		Tyran tritri **
Purple Martin **	Yahner 1983	1	1	1	1	1	1	1	1	1	1	1	1	Hirondelle noire **
Barn Swallow ***	Yahner 1983				3	3	3	3	3	3				Hirondelle des granges ***
Blue Jay ***	Yahner 1983	1	1	1	1	1	1	2	2	2	3	3	1	Geai bleu ***
American Crow **	Yahner 1983	1	1	1	1	1	1	1	1	1	1	1	1	Corneille d'Amérique **
Black-capped Chickadee***	Yahner 1983	1	1	1	1	1	1	2	2	2	1	1	1	Mésange à tête noire ***
Brown Creeper *	Yahner 1983	1	1	1							1	1	1	Grimpereau brun *
House Wren *	Yahner 1983				1	1	1	1	1	1				Troglodyte familier *
Golden-crowned Kinglet *	Yahner 1983										1	1		Roitelet à couronne dorée *
Ruby-crowned Kinglet **	Yahner 1983				1	1	1				1	1		Roitelet à couronne rubis **
Gray-cheeked Thrush **	Yahner 1983				1	1	1							Grive à joues grises **
Swainson's Thrush *	Yahner 1983				1	1	1							Grive à dos olive *
American Robin ***	Yahner 1983				3	3	3	3	3	3	2	2		Merle d'Amérique ***
Gray Catbird **	Yahner 1983				2	2	2	2	2	2	1	1		Moqueur chat **
Brown Thrasher ***	Yahner 1983				2	2	2	2	2	2	1	1		Moqueur roux ***
Cedar Waxwing *	Yahner 1983	1	1	1	1	1	1	1	1	1	1	1	1	Jaseur des cèdres *
European Starling ***	Yahner 1983	3	3	3	2	2	2	3	3	3	3	3	3	Etourneau sansonnet ***
Warbling Vireo **	Yahner 1983				1	1	1	1	1	1				Viréo mélodieux **
Nashville Warbler *	Yahner 1983				1	1	1				1	1		Paruline à joues grises *
Yellow Warbler *	Yahner 1983				1	1	1	1	1	1				Paruline jaune *
Myrtle Warbler **	Yahner 1983				2	2	2				3	3		Paruline à croupion jaune **

HABITAT: Shelterbelts/Rideaux-Abris

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Palm Warbler **	Yahner 1983				1	1	1				1	1		Paruline à couronne rousse **
Mourning Warbler *	Yahner 1983				1	1	1				1	1		Paruline triste *
Common Yellowthroat **	Yahner 1983				2	2	2	1	1	1	1	1		Paruline masquée **
Rose-breasted Grosbeak **	Yahner 1983				1	1	1	1	1	1				Cardinal à poitrine rose **
Indigo Bunting **	Yahner 1983				1	1	1	1	1	1				Passerin indigo **
American Tree Sparrow **	Yahner 1983	1	1	1							2	2	1	Bruant hudsonien **
Chipping Sparrow ***	Yahner 1983				3	3	3	3	3	3	1	1		Bruant familier ***
Vesper Sparrow **	Yahner 1983				1	1	1	1	1	1	1	1		Bruant vespéral **
Song Sparrow ***	Yahner 1983				3	3	3	3	3	3	1	1		Bruant chanteur ***
White-throated Sparrow **	Yahner 1983				3	3	3				3	3		Bruant à gorge blanche **
Dark-eyed Junco ***	Yahner 1983	3	3	3	1	1	1	3	3	3	3	3	3	Junco ardoisé ***
Red-winged Blackbird ***	Yahner 1983				2	2	2	3	3	3	3	3		Carouge à épaulettes ***
Western Meadowlark *	Yahner 1983				1	1	1	1	1	1				Sturnelle de l'Ouest *
Common Grackle ***	Yahner 1983				3	3	3	3	3	3	3	3		Quiscale bronzé ***
Brown-headed Cowbird **	Yahner 1983				2	2	2	1	1	1				Vacher à tête brune **
Northern Oriole **	Yahner 1983				1	1	1	2	2	2				Oriole du Nord **
American Goldfinch ***	Yahner 1983	3	3	3	1	1	1	2	2	2	2	2	3	Chardonneret jaune ***
House Sparrow ***	Yahner 1983	3	3	3	3	3	3	3	3	3	3	3	3	Moineau domestique ***

HABITAT: Shelterbelts/Rideaux-Abris

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

Yahner 1983

*** - birds of high importance to the avian community.
** - " " moderate "
* - " " low "

1 = <50, 2 = 50-150, and 3 = >150 birds/100 ha.

HABITAT: Sorghum/Sorgho

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Canada Goose	Hunt & Bell 1973			F*	F*	F*								Bernache du Canada

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

Hunt & Bell 1973

= percentage of damage claims in Wisconsin (1965-1973), attributable to crop

* = < 1% of damage claims in Wisconsin (1963-1973) attributable to crop.

'Spring' = March, April and May

HABITAT: Soybeans/Soja

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Canada Goose	Kall & Samson 1984	F1	F1	F1	F1						F1	F1	F1	Bernache du Canada
	Graber & Graber 1963	1												
	Hunt & Bell 1973			F*	F*	F*				F*	F*	F*		
Turkey Vulture	Graber & Graber 1963					1	1	1						Urubu à tête rouge
Cooper's Hawk	Castrale 1986						<1	<1						Epervier de Cooper
Red-tailed Hawk	Graber & Graber 1963	1												Buse à queue rousse
Ring-necked Pheasant	Warnock & Joselyn 1964							M2						Faisan de chasse
Northern Bobwhite	Graber & Graber 1963					1	1	1						Colin de Virginie
	Castrale 1986						<1	<1						
Killdeer	Castrale 1986						6	6						Pluvier kildir
Spotted Sandpiper	Graber & Graber 1963					1	1	1						Chevalier branlequeue
Upland Sandpiper	Graber & Graber 1963					1	1	1						Maubèche des champs
Mourning Dove	Graber & Graber 1963	2				1	1	1						Tourterelle triste
	Castrale 1986						2	2						
Chimney Swift	Graber & Graber 1963					1	1	1						Martinet ramoneur
	Castrale 1986						1	1						
Red-bellied Woodpecker	Graber & Graber 1963	1												Pic à ventre roux
Eastern Kingbird	Castrale 1986						2	2						Tyran tritri
Horned Lark	Graber & Graber 1963	2				M2	M2	M2						Alouette cornue
	Ashton & Jackson 1983					+	+							
	Castrale 1986						11	11						
Purple Martin	Graber & Graber 1963					1	1	1						Hirondelle noire
	Castrale 1986						2	2						
Barn Swallow	Graber & Graber 1963					1	1	1						Hirondelle des granges
	Castrale 1986						19	19						
American Crow	Graber & Graber 1963	1												Corneille d'Amérique
	Castrale 1986						2	2						

HABITAT: Soybeans/Soja

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
American Robin	Graber & Graber 1963					1	1	1						Merle d'Amérique
Northern Mockingbird	Graber & Graber 1963					1	1	1						Moqueur polyglotte
Brown Thrasher	Castrale 1986						1	1						Moqueur roux
Loggerhead Shrike	Graber & Graber 1963					1	1	1						Pie-grièche migatrice
European Starling	Fischl & Cacamise 1985	F3	F3	F2	F2	F1	F1	F1	F1	F1	F1	F3	F3	Etourneau sansonnet
	Castrale 1986						<1	<1						
Indigo Bunting	Graber & Graber 1963					1	1	1						Passerin indigo
	Castrale 1986						4	4						
Field Sparrow	Graber & Graber 1963					1	1	1						Bruant des champs
	Castrale 1986						13	13						
Vesper Sparrow	Rodenhouse & Best 1983				FN1	FN1	FN1	PFN1	PFN1					Bruant vespéral
	Ashton & Jackson 1983					+	+							
Savannah Sparrow	Graber & Graber 1963	1				1	1	1						Bruant des prés
Grasshopper Sparrow	Graber & Graber 1963					1	1	1						Bruant sauterelle
Song Sparrow	Ashton & Jackson 1983					+	+							Bruant chanteur
	Castrale 1986						3	3						
Dark-eyed Junco	Graber & Graber 1963	1												Junco ardoisé
	Gottfried & Franks 1975	F	F	F							F	F	F	
Lapland Longspur	Graber & Graber 1963	2												Bruant lapon
Red-winged Blackbird	Graber & Graber 1963	3				1	1	1						Carouge à épaulettes
	Ashton & Jackson 1983					T	T							
	Castrale 1986						2	2						
Eastern Meadowlark *	Graber & Graber 1963	2				1	1	1						Sturnelle des prés *
	Castrale 1986						1	1						
Common Grackle	Graber & Graber 1963					1	1	1						Quiscale bronzé
	Castrale 1986						2	2						
Brown-headed Cowbird	Castrale 1986						1	1						Vacher à tête brune

HABITAT: Soybeans/Soja

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
American Goldfinch	Graber & Graber 1963	1				1	1	1						Chardonneret jaune
	Castrale 1986						<1	<1						Chardonneret jaune
House Sparrow	Graber & Graber 1963	1				1	1	1						Moineau domestique
	Castrale 1986						1	1						Moineau domestique

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

Castrale 1986 — # = percentage of surveys on which species was detected (summer N = 140, winter N = 180)

Fischl and Cacamise 1985 — 1 = -1 to < 0, 2 = 0 to 0.5 (E* values)

E* is the Relativized Electivity Index based on O'Neil's selectivity coefficient Wi (O'Neil 1969). Values approach +1 when habitats are used in proportions greater than their abundance, and -1 when they are used in proportions less than their abundance.

Graber and Graber 1963 — 1 = <10, 2 = 10-50, and 3 = >50 birds/100 ha

* - listed as Meadowlark species, may be Eastern Meadowlark, Western Meadowlark or both.

HABITAT: Soybeans/Soja

Hunt & Bell 1973	0 - percentage of damage claims in Wisconsin (1965-1973), attributable to crop
	* - < 1% of damage claims in Wisconsin (1963-1973) attributable to crop.
	'Spring' - March, April and May 'Fall' - September, October and November
Kahl & Samson 1984	1 = <20 and 3 = >40 preference value
	Preference value expressed as the % total geese observed in a field type divided by the total agricultural area of that type.
Rodenhouse & Best 1983	1 = <30 pairs/40 ha
Warnock & Joselyn 1964	2 = 10-50 and 3 = >50 nests/100 ha

HABITAT: Soybeans-Notill/Soja-Semis Direct

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Canada Goose	Castrale 1986						<1	<1						Bernache du Canada
Turkey Vulture	Castrale 1986						1	1						Urubu à tête rouge
Cooper's Hawk	Castrale 1986						<1	<1						Epervier de Cooper
Northern Bobwhite	Castrale 1986						9	9						Colin de Virginie
Killdeer	Castrale 1986						<1	<1						Pluvier kildir
Rock Dove	Castrale 1986						4	4						Pigeon biset
Mourning Dove	Castrale 1986						42	42						Tourterelle triste
Chimney Swift	Castrale 1986						<1	<1						Martinet ramoneur
Eastern Kingbird	Castrale 1986						3	3						Tyran tritri
Barn Swallow	Castrale 1986						43	43						Hirondelle des granges
American Crow	Castrale 1986						9	9						Corneille d'Amérique
Eastern Bluebird	Castrale 1986						<1	<1						Merle bleu de l'Est
American Robin	Castrale 1986						3	3						Merle d'Amérique
Northern Mockingbird	Castrale 1986						<1	<1						Moqueur polyglotte
Brown Thrasher	Castrale 1986						<1	<1						Moqueur roux
European Starling	Castrale 1986						1	1						Etourneau sansonnet
Northern Cardinal	Castrale 1986						<1	<1						Cardinal rouge
Indigo Bunting	Castrale 1986						3	3						Passerin indigo--
Field Sparrow	Castrale 1986						9	9						Bruant des champs
Grasshopper Sparrow	Castrale 1986						1	1						Bruant sauterelle
Song Sparrow	Castrale 1986						13	13						Bruant chanteur
Red-winged Blackbird	Castrale 1986						11	11						Carouge à épaulettes
Eastern Meadowlark	Castrale 1986						24	24						Sturnelle des près
Common Grackle	Castrale 1986						3	3						Quiscale bronzé
American Goldfinch	Castrale 1986						4	4						Chardonneret jaune
House Sparrow	Castrale 1986						3	3						Moineau domestique

HABITAT: Soybeans-Notill/Soja-Semis Direct

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

Castrale 1986 # = percentage of surveys on which species was detected (summer N = 140, winter N = 180)

HABITAT: Soybeans-Notill Corn/Soja-Semis Direct Sur Maïs

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Ring-necked Pheasant	Basore et al. 1986					N1	N1	N1						Faisan de chasse
Killdeer	Basore et al. 1986					N1	N1	N1						Pluvier kildir
Mourning Dove	Basore et al. 1986							N1						Tourterelle triste
Field Sparrow	Basore et al. 1986						N1	N1						Bruant des champs
Vesper Sparrow	Basore et al. 1986							N1						Bruant vespéral
Western Meadowlark	Basore et al. 1986						N1	N1						Sturnelle de l'Ouest
Brown-headed Cowbird	Basore et al. 1986							N1						Vacher à tête brune

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

Basore et al. 1986 1 = <10, 2 = 10-50, and 3 = >50 nests/100 ha.

HABITAT: Soybeans-Stubble/Soja-Chaume

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Turkey Vulture	Castrale 1986	2	2											Urubu à tête rouge
Northern Harrier	Castrale 1986	<1	<1											Busard Saint-Martin
Red-tailed Hawk	Castrale 1986	3	3											Buse à queue rousse
American Kestrel	Castrale 1986	<1	<1											Crécerelle d'Amérique
Northern Bobwhite	Castrale 1986	<I	<1											Colin de Virginie
Killdeer	Castrale 1986	6	6											Pluvier kildir
Rock Dove	Castrale 1986	<1	<1											Pigeon biset
Mourning Dove	Castrale 1986	<1	<1											Tourterelle triste
Horned Lark	Castrale 1986	26	26											Alouette cornue
Blue Jay	Castrale 1986	<1	<1											Geai bleu
American Crow	Castrale 1986	5	5											Corneille d'Amérique
Eastern Bluebird	Castrale 1986	4	4											Merle-bleu de l'Est
American Robin	Castrale 1986	2	2											Merle d'Amérique
European Starling	Castrale 1986	4	4											Etourneau sansonnet
American Tree Sparrow	Castrale 1986	1	1											Bruant hudsonien
Dark-eyed Junco	Castrale 1986	1	1											Junco ardoisé
Eastern Meadowlark	Castrale 1986	2	2											Sturnelle des prés
Common Grackle	Castrale 1986	<1	<1											Quiscale bronzé
Brown-headed Cowbird	Castrale 1986	1	1											Vacher à tête brune
American Goldfinch	Castrale 1986	<I	<1											Chardonneret jaune

HABITAT:Soybeans-Stubble/Soja-Chaume

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

Castrale 1986 # = percentage of surveys on which species was detected (summer N = 140, winter N = 180)

HABITAT: Streams/Ruisseaux

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
European Starling	McNeil et al. 1976					+	+							Etourneau sansonnet
Red-winged Blackbird	McNeil et al. 1976						N							Carouge à épaulettes
Common Grackle	McNeil et al. 1976				F	F	F	P	P	P	P			Quiscale bronzé
Present, Season Not Specified														Présent, Saison Non Précisée
American Crow	McNeil et al. 1976													Corneille d'Amérique

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

McNeil et al. 1976 1 = <30%, 2 = 30-60% et 3 = >60% utilisation

HABITAT: Strip-Cover/Bandes Non Cultivée

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Ring-necked Pheasant	Warnock & Joselyn 1964					N3	N3	N3	N3					Faisan de chasse
Killdeer	Basore et al. 1986					N2	N2	N2						
Mourning Dove	Basore et al. 1986					N1	N1	N1						Pluvier kildir
American Robin	Basore et al. 1986							N1						Tourterelle triste
Brown Thrasher	Basore et al. 1986						N1	N1						Merle d'Amérique
Common Yellowthroat	Basore et al. 1986						N1	N1						Moqueur roux
Field Sparrow	Basore et al. 1986						N2	N2						Paruline masquée
Vesper Sparrow	Basore et al. 1986						N1	N1						Bruant des champs
Grasshopper Sparrow	Basore et al. 1986							N2						Bruant vespéral
Song Sparrow	Basore et al. 1986						N1	N1						Bruant sauterelle
Red-winged Blackbird	Basore et al. 1986						N1	N1						Bruant chanteur
	Somers et al. 1981						N3	N3						Carouge à épaulettes
Western Meadowlark	Basore et al. 1986							F1	F1					
Brown-headed Cowbird	Basore et al. 1986					N1	N1	N1						Sturnelle de l'Ouest
American Goldfinch	Basore et al. 1986						N3	N3						Vacher à tête brune
							N1	N1						Chardonneret jaune

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

Basore et al. 1986 1 = <10, 2 = 10-50, and 3 = >50 nests/100 ha.

Somers et al. 1981 1 = <30, 2 = 30 -60, and 3 = >60 % of birds using habitat

Warnock & Joselyn 1964 2 = 10-50 and 3 = >50 nests/100 ha

HABITAT: Sunflowers/Tournesols

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Red-headed Woodpecker	Williams & Batzli 1979	F1	F1										F1	Pic à tête rouge
Downy Woodpecker	Williams & Batzli 1979	F1	F1										F1	Pic mineur
White-breasted Nuthatch	Williams & Batzli 1979	F1	F1										F1	Sittelle à poitrine blanche

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant, P = Perching/Perchant R = Roosting/Se reposant

Williams & Batzli 1979 1 = <10, 2 = 10-40, and 3 = >40 % of food found in stomach

HABITAT: Timothy/Phléole des Prés

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Brown-headed Cowbird	Potvin et al. 1976					Fl			Fl	Fl				Vacher à tête brune

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

Potvin et al. 1976 1 = <30%, 2 = 30-60% et 3 = >60% fréquence d'apparition du type de nourriture dans le gésier

HABITAT: Tobacco/Tabac

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Common Grackle	Thurston & Prachaubmoth 1971							F						Quiscale bronzé
Present, Season Not Specified														Présent, Saison Non Précisée
American Crow	Thurston & Prachaubmoth 1971							+						Corneille d'Amérique
American Robin	Thurston & Prachaubmoth 1971							+						Merle d'Amérique
European Starling	Thurston & Prachaubmoth 1971							+						Etourneau sansonnet
House Sparrow *	Thurston & Prachaubmoth 1971							+						Moineau domestique *

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

Thurston & Prachaubmoth 1971 * - House Sparrow not feeding on larvae but may have been feeding them to their young.

HABITAT: Tomatoes/Tomates

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Français commun
Red-winged Blackbird	Ashton & Jackson 1983					T	T							Carouge à épaulettes
Present, Season Not Specified														Présent, Saison Non Précisée
American Crow *	Conover 1985													Corneille d'Amérique

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

Conover 1985

* - In different control plots Common Crow damaged an average of 4% of the ripe canteloupes, and 18% of the ripe tomatoes during each trial period. Months not specified.

HABITAT: Trefoil/Trèfle

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Common Grackle	Potvin et al. 1976							F1						Quiscale bronzé

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

Potvin et al. 1976 1 = <30%, 2 = 30-60% et 3 = >60% fréquence d'apparition du type de nourriture dans le gésier

HABITAT: Turf/Terrains Gazonnés

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Horned Lark	McNeil et al. 1976									+	+			Alouette cornue
European Starling	McNeil et al. 1976			F	F	F								Etourneau sansonnet
Red-winged Blackbird	McNeil et al. 1976			+	+	+								Carouge à épaulettes
Common Grackle	McNeil et al. 1976				+	+	+							Quiscale bronzé
Present, Season Not Specified														Présent, Saison Non Précisée
Black-bellied Plover	McNeil et al. 1976													Pluvier argenté
Lesser Golden-plover	McNeil et al. 1976													Pluvier doré d'Amérique
Killdeer	McNeil et al. 1976													Pluvier kildir
Upland Sandpiper	McNeil et al. 1976													Maubèche des champs
Ring-billed Gull	McNeil et al. 1976													Goéland à bec cerclé
Herring Gull	McNeil et al. 1976													Goéland argenté
American Robin	McNeil et al. 1976													Merle d'Amérique
Water Pipit	McNeil et al. 1976													Pipit spioncelle
Brown-headed Cowbird	McNeil et al. 1976													Vacher à tête brune

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

McNeil et al. 1976 1 = <30%, 2 = 30-60% et 3 = >60% utilisation

HABITAT: Urban/Zone Urbaine

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Rock Dove	Lussenhop 1976				T	T	T							Pigeon biset
Mourning Dove	Lussenhop 1976				T	T	T							Tourterelle triste
Yellow-bellied Sapsucker	Hickey & Hunt 1960				+									Pic maculé
Northern Flicker	Lussenhop 1976				T	T	T							Pic flamboyant
	Hickey & Hunt 1960				+	+								
Blue Jay	Lussenhop 1976				T	T	T							Geai bleu
	Hickey & Hunt 1960					+								
American Crow	Hickey & Hunt 1960				+									Corneille d'Amérique
Brown Creeper	Hickey & Hunt 1960			+	+									Grimpereau brun
American Robin	Lussenhop 1976				T	T	T							Merle d'Amérique
	Hickey & Hunt 1960				+	+	+							
Gray Catbird	Hickey & Hunt 1960					+								Moqueur chat
Brown Thrasher	Lussenhop 1976				T	T	T							Moqueur roux
	Hickey & Hunt 1960					+								
European Starling	Fischl & Cacamise 1985	F1	F2	F2	F2	F2	F2	F2	F2	F1	F2	F2	F1	Etourneau sansonnet
	Lussenhop 1976				T	T	T							
	Hickey & Hunt 1960				+	+								
Yellow Warbler	Hickey & Hunt 1960					+								Paruline jaune
Palm Warbler	Hickey & Hunt 1960				+	+								Paruline à couronne rousse
Northern Cardinal	Hickey & Hunt 1960				+	+								Cardinal rouge
Chipping Sparrow	Lussenhop 1976				T	T	T							Bruant familier
	Hickey & Hunt 1960				+	+								
White-throated Sparrow	Hickey & Hunt 1960				+	+								Bruant à gorge blanche
Dark-eyed Junco	Hickey & Hunt 1960				+									Junco ardoisé
Common Grackle	McNeil et al. 1976							P	P	P	P			Quiscale bronzé
	Lussenhop 1976				T	T	T							
	Hickey & Hunt 1960				+	+								

HABITAT: Urban/Zone Urbaine

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
House Sparrow	Lussenhop 1976				T	T	T							Moineau domestique
	Hickey & Hunt 1960				+	+								
Present, Season Not Specified														Présent, Saison Non Précisée
Killdeer	McNeil et al. 1976													Pluvier kildir
Ring-billed Gull	McNeil et al. 1976													Goéland à bec cerclé
Herring Gull	McNeil et al. 1976													Goéland argenté
Rock Dove	McNeil et al. 1976													Pigeon biset
Common Nighthawk	McNeil et al. 1976													Engoulevent d'Amérique
Purple Martin	McNeil et al. 1976													Hirondelle noire
American Crow	McNeil et al. 1976													Corneille d'Amérique
European Starling	McNeil et al. 1976													Etourneau sansonnet
Red-winged Blackbird	McNeil et al. 1976													Carouge à épaulettes
Brown-headed Cowbird	McNeil et al. 1976													Vacher à tête brune
House Sparrow	McNeil et al. 1976													Moineau domestique

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

Fischl and Cacamise 1985 1 = -1 to < 0, 2 = 0 to 0.5 (E* values)

Values approach +1 when habitats are used in proportions greater than their abundance, and -1 when they are used in proportions less than their abundance.

HABITAT: Urban/Zone Urbaine

Lussenhop 1976	1 = <10, 2 = 10-30, 3 = 31-50, and 4 = >50 maximum number of individuals/100 ha.
McNeil et al. 1976	1 = <30%, 2 = 30-60%, and 3 = >60% use

HABITAT: Urban-Cemetery/Zone Urbaine-Cimetière

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Mallard	Lussenhop 1976				N3	N3	N3							Canard colvert
American Kestrel	Lussenhop 1976				N1	N1	N1							Crécerelle d'Amérique
Red-headed Woodpecker	Lussenhop 1976				N3	N3	N3							Pic à tête rouge
Northern Flicker	Lussenhop 1976				N2	N2	N2							Pic flamboyant
Eastern Wood-pewee	Lussenhop 1976				N1	N1	N1							Pioui de l'Est
Great-crested Flycatcher	Lussenhop 1976				N1	N1	N1							Tyran huppé
Eastern Kingbird	Lussenhop 1976				N1	N1	N1							Tyran tritri
Blue Jay	Lussenhop 1976				N3	N3	N3							Geai bleu
American Crow	Lussenhop 1976				N4	N4	N4							Corneille d'Amérique
American Robin	Lussenhop 1976				N4	N4	N4							Merle d'Amérique
Gray Catbird	Lussenhop 1976				N2	N2	N2							Moqueur chat
Northern Mockingbird	Lussenhop 1976				F	F	F							Moqueur polyglotte
Brown Thrasher	Lussenhop 1976				N2	N2	N2							Moqueur roux
European Starling	Lussenhop 1976				N4	N4	N4							Etourneau sansonnet
Northern Cardinal	Lussenhop 1976				N1	N1	N1							Cardinal rouge
Indigo Bunting	Lussenhop 1976				N2	N2	N2							Passerin indigo
Chipping Sparrow	Lussenhop 1976				N4	N4	N4							Bruant familier
Song Sparrow	Lussenhop 1976				N1	N1	N1							Bruant chanteur
Red-winged Blackbird	Lussenhop 1976				N2	N2	N2							Carouge à épaulettes
Common Grackle	Lussenhop 1976				N4	N4	N4							Quiscale bronzé
Brown-headed Cowbird	Lussenhop 1976				N1	N1	N1							Vacher à tête brune
Northern Oriole	Lussenhop 1976				N1	N1	N1							Oriole du Nord

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

Lussenhop 1976 1 = <10, 2 = 10-30, 3 = 31-50, and 4 = >50 maximum number of individuals/100 ha.

HABITAT: Wheat/Blé

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Canada Goose	Graber & Graber 1963	1												Bernache du Canada
Northern Harrier	Graber & Graber 1963	1												Busard Saint-Martin
American Kestrel	Graber & Graber 1963	1				1	1	1						Crécerelle d'Amérique
Northern Bobwhite	Graber & Graber 1963					1	1	1						Colin de Virginie
Killdeer	Graber & Graber 1963	1												Pluvier kildir
Mourning Dove	Graber & Graber 1963	1				2	2	2						Tourterelle triste
Chimney Swift	Graber & Graber 1963					1	1	1						Martinet ramoneur
Red-headed Woodpecker	Williams & Batzli 1979	F1	F1										F1	Pic à tête rouge
Downy Woodpecker	Williams & Batzli 1979	F1	F1										F1	Pic mineur
Horned Lark	Graber & Graber 1963	2				1	1	1						Alouette cornue
Northern Rough-winged Swallow	Graber & Graber 1963					1	1	1						Hirondelle à ailes hérissées
Barn Swallow	Graber & Graber 1963					1	1	1						Hirondelle des granges
American Crow	Graber & Graber 1963	1				1	1	1						Corneille d'Amérique
White-breasted Nuthatch	Williams & Batzli 1979	F1	F1										F1	Sittelle à poitrine blanche
American Robin	Graber & Graber 1963	1				1	1	1						Merle d'Amérique
European Starling	Graber & Graber 1963	1				1	1	1						Etourneau sansonnet
Common Yellowthroat	Graber & Graber 1963					1	1	1						Paruline masquée
Northern Cardinal	Graber & Graber 1963	1				1	1	1						Cardinal rouge
Indigo Bunting	Graber & Graber 1963					1	1	1						Passerin indigo
American Tree Sparrow	Graber & Graber 1963	1												Bruant hudsonien
Field Sparrow	Graber & Graber 1963					1	1	1						Bruant des champs
Grasshopper Sparrow	Graber & Graber 1963					N1	N1	N1						Bruant sauterelle
Song Sparrow	Ashton & Jackson 1983					+	+							Bruant chanteur
	Graber & Graber 1963	1				1	1	1						
Lapland Longspur	Graber & Graber 1963	1												Bruant lapon
Red-winged Blackbird	Johnson & Caslick 1982											F1		Carouge à épaulettes

HABITAT: Wheat/Blé

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Red-winged Blackbird	Somers et al. 1981							F1	F1					Carouge à épaulettes
	Ashton & Jackson 1983					T	T							
	Graber & Graber 1963					N2	N2	N2						
Eastern Meadowlark *	Graber & Graber 1963	1				N1	N1	N1						Sturnelle des prés *
Common Grackle	Graber & Graber 1963					1	1	1						Quiscale bronzé
Brown-headed Cowbird	Graber & Graber 1963	1				N1	N1	N1						Vacher à tête brune
American Goldfinch	Graber & Graber 1963	1												Chardonneret jaune
House Sparrow	Graber & Graber 1963	1				3	3	3						Moineau domestique

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

Graber and Graber 1963 1 = <10, 2 = 10-50, and 3 = >50 birds/100 ha

* = listed as Meadowlark species, may be Eastern Meadowlark, Western Meadowlark or both.

Johnson and Caslick 1982 1 = <30%, 2 = 30-60%, and 3 = >60% utilization

Somers et al. 1981 1 = <30, 2 = 30 -60, and 3 = >60 % of birds using habitat

Williams & Batzli 1979 1 = <10, 2 = 10-40, and 3 = >40 % of food found in stomach

HABITAT: Wheat-Winter/Blé d'Hiver

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Canada Goose	Kahl & Samson 1984	F1	F1	F3	F3						F1			Bernache du Canada
	Hunt & Bell 1973									F*	F*	F*		
	Flegler et al. 1987				F						F		F	
Mourning Dove	Armstrong & Noakes 1981	F1	F1	F1	F1	F1	F1	F2	F2	F2	F1	F1	F1	Tourterelle triste
European Starling	Dolbeer et al. 1978/79	F	F	F								F	F	Etourneau sansonnet
Red-winged Blackbird	Dolbeer et al. 1978/79	F	F	F								F	F	Carouge à épaulettes
Eastern Meadowlark	Rosebery & Klimstra 1970					N2	N2	N2	N2	N2				Sturnelle des prés

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

Armstrong and Noakes 1981 — 1 = < 30%, 2 = 30-60%, and 3 = >60 % frequency of occurence of food type in stomach

Dolbeer et al. 1973 — 1 = Rare, 2 = Occasional, 3 = Very Common

Hunt & Bell 1973 — # = percentage of damage claims in Wisconsin (1965-1973), attributable to crop

* = < 1% of damage claims in Wisconsin (1963-1973) attributable to crop.

'Fall' = September, October and November

HABITAT: Wheat-Winter/Blé d'Hiver

Kahl & Samson 1984	1 = <20 and 3 = >40 preference value Preference value expressed as the % total geese observed in a field type divided by the total agricultural area of that type.
Roseberry & Klimstra 1970	1 = <10, 2 =10-30, 3 =31-50, and 4 = >50 nests/100 ha

HABITAT: Wheat & Oats/Blé & Avoine

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Ring-necked Pheasant	Warnock & Joselyn 1964						N3	N3						Faisan de chasse

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

Warnock & Joselyn 1964 2 = 10-50 and 3 = >50 nests/100 ha

HABITAT: Wheat & Rye/Blé & Seigle

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
European Starling	Fischl & Cacamise 1985	F1	F1	F1	F1	F1	F1	F1	F2	F2	F2	F2	F1	Etourneau sansonnet

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

Fischl and Cacamise 1985 1 = -1 to < 0, 2 = 0 to 0.5 (E^* values)

E^* is the Relativized Electivity Index based on O'Neil's selectivity coefficient W1 (O'Neil 1969). Values approach +1 when habitats are used in proportions greater than their abundance, and -1 when they are used in proportions less than their abundance.

HABITAT: Woodlots/Boisé

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Northern Goshawk	Wegner 1976					+	+	+	+	+	+			Autour des palombes
Red-shouldered Hawk	Freemark 1984						T1/0.2							Buse à épaulettes
	Galli et al. 1976						U20	U20	U20					
Broad-winged Hawk	Askins & Philbrick 1987					T1/36	T1/36	T1/36						Petite Buse
Red-tailed Hawk	Wegner 1976					+	+	+	+	+	+			Buse à queue rousse
American Kestrel	Freemark 1984						T1/0.3							Crécerelle d'Amerique
	Wegner 1976					+	+	+	+	+	+			
Merlin	Wegner 1976					+	+	+	+	+	+			Faucon émerillon
Ring-necked Pheasant	Galli et al. 1976						U20	U20	U20					Faisan de chasse
Ruffed Grouse	Freemark 1984						T5/0.4							Gélinotte huppée
	Askins & Philbrick 1987					T1/45	T1/45	T1/45						
Northern Bobwhite	Askins & Philbrick 1987					T1/9	T1/9	T1/9						Colin de Virginie
American Woodcock	Freemark 1984						T1/0.3							Bécasse d'Amerique
Mourning Dove	Freemark 1984						T8/2.0							Tourterelle triste
	Galli et al. 1976						U60	U60	U60					
	Askins & Philbrick 1987					T1/18	T1/18	T1/18						
Black-billed Cuckoo	Freemark 1984						T4/0.5							Coulicou à bec noir
	Galli et al. 1976						U20	U20	U20					
	Askins & Philbrick 1987					T1/18	T1/18	T1/18						
Yellow-billed Cuckoo	Galli et al. 1976						U30	U30	U30					Coulicou à bec jaune
	Blake & Karr 1984						T85	T85	T85					
	Askins & Philbrick 1987					T1/27	T1/27	T1/27						
Eastern Screech-owl	Howe & Jones 1977						+11	+11						Petit-duc maculé
Great Horned Owl	Howe & Jones 1977						N11	N11						Grand-duc d'Amérique
	Wegner 1976					+	+	+	+	+	+			
Barred Owl	Askins & Philbrick 1987					T1/36	T1/36	T1/36						Chouette rayée
Whip-poor-will	Askins & Philbrick 1987					T1/27	T2/27	T1/27						Engoulevent bois-pourri

HABITAT: Woodlots/Boisés

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Ruby-throated Hummingbird	Freemark 1984						T3/0.3							
	Wegner 1976					+	+	+	+	+	+			Colibri à gorge rubis
Red-headed Woodpecker	Howe & Jones 1977						N56	N56						
	Wegner 1976					+	+	+	+	+	+			Pic à tête rouge
Red-bellied Woodpecker	Galli et al. 1976						U40	U40	U40					
Yellow-bellied Sapsucker	Freemark 1984						T9/0.8							Pic à ventre roux
Downy Woodpecker	Freemark 1984						T10/0.5							Pic maculé
	Galli et al. 1976						C70	C70	C70					Pic mineur
	Howe & Jones 1977						N44	N44						
	Askins & Philbrick 1987					T1/45	T1/45	T1/45						
	Wegner 1976					+	+	+	+	+	+			
Hairy Woodpecker	Freemark 1984						T11/1.0							
	Galli et al. 1976						U60	U60	U60					Pic chevelu
	Blake & Karr 1984						T35	T35	T35					
	Howe & Jones 1977						+33	+33						
	Askins & Philbrick 1987					T1/64	T1/64	T1/64						
	Wegner 1976					+	+	+	+	+	+			
Northern Flicker	Freemark 1984						T8/1.0							
	Galli et al. 1976						C90	C90	C90					Pic flamboyant
	Howe & Jones 1977						N44	N44						
	Askins & Philbrick 1987					T1/91	T1/91	T1/91						
	Wegner 1976					+	+	+	+	+	+			
Pileated Woodpecker	Freemark 1984						T7/0.5							
	Wegner 1976					+	+	+	+	+	+			Grand Pic
Eastern Wood-pewee	Freemark 1984						T16/2.3							
	Galli et al. 1976						C60	C60	C60					Pioui de l'Est
	Blake & Karr 1984						T100	T100	T100					

HABITAT: Woodlots/Boisés

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Eastern Wood-pewee	Howe & Jones 1977						T78	T78						Pioui de l'Est
	Askins & Philbrick 1987					T1/82	T1/82	T1/82						
	Wegner 1976					+	+	+	+	+	+			
Acadian Flycatcher	Blake & Karr 1984						T35	T35	T35					Moucherolle vert
	Askins & Philbrick 1987					T1/9	T1/9	T1/9						
Least Flycatcher	Freemark 1984						T1/1.3							Moucherolle tchébec
	Wegner 1976					+	+	+	+	+	+			
Eastern Phoebe	Freemark 1984						T2/0.5							Moucherolle phébi
	Askins & Philbrick 1987					T1/64	T1/64	T1/64						
	Wegner 1976					+	+	+	+	+	+			
Great-crested Flycatcher	Freemark 1984						T16/1.9							Tyran huppé
	Galli et al. 1976						C80	C80	C80					
	Blake & Karr 1984						T100	T100	T100					
	Howe & Jones 1977						N56	N56						
	Askins & Philbrick 1987					T2/82	T2/82	T2/82						
	Wegner 1976					+	+	+	+	+	+			
Eastern Kingbird	Freemark 1984						T6/1.0							Tyran tritri
	Howe & Jones 1977						+11	+11						
	Askins & Philbrick 1987					T1/9	T1/9	T1/9						
	Wegner 1976					+	+	+	+	+	+			
Tree Swallow	Wegner 1976					+	+	+	+	+	+			Bruant hudsonien
Blue Jay	Freemark 1984						T15/2.0							Geai bleu
	Galli et al. 1976						C80	C80	C80					
	Howe & Jones 1977						+89	+89						
	Askins & Philbrick 1987					T2/100	T2/100	T2/100						
	Wegner 1976					+	+	+	+	+	+			
American Crow	Freemark 1984						T15/1.9							Corneille d'Amérique

HABITAT: Woodlots/Boisés

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
American Crow	McNeil et al. 1976							R	R	R	R			
	Galli et al. 1976						U60	U60	U60					Corneille d'Amérique
	Askins & Philbrick 1987					T1/45	T1/45	T1/45						
	Wegner 1976					+	+	+	+	+	+			
Black-capped Chickadee	Freemark 1984						T15/1.8							
	Galli et al. 1976						U50	U50	U50					Mésange à tête noire
	Howe & Jones 1977						+11	+11						
	Askins & Philbrick 1987					T3/100	T3/100	T3/100						
	Wegner 1976					+	+	+	+	+	+			
Eastern Tufted Titmouse	Galli et al. 1976						C90	C90	C90					Mésange bicolore
	Askins & Philbrick 1987					T2/45	T2/45	T2/45						
Red-breasted Nuthatch	Freemark 1984						T3/1.2							Sittelle à poitrine rousse
	Wegner 1976					+	+	+	+	+	+			
White-breasted Nuthatch	Freemark 1984						T16/1.0							
	Galli et al. 1976						C60	C60	C60					Sittelle à poitrine blanche
	Blake & Karr 1984						T30	T30	T30					
	Howe & Jones 1977						+56	+56						
	Askins & Philbrick 1987					T1/55	T1/55	T1/55						
	Wegner 1976					+	+	+	+	+	+			
Brown Creeper	Freemark 1984						T10/1.0							
	Askins & Philbrick 1987					T1/9	T1/9	T1/9						Grimpereau brun
	Wegner 1976					+	+	+	+	+	+			
Carolina Wren	Askins & Philbrick 1987					T1/18	T1/18	T1/18						
House Wren	Galli et al. 1976						C90	C90	C90					Troglodyte de Caroline
	Howe & Jones 1977						+33	+33						Troglodyte familier
	Askins & Philbrick 1987					T2/100	T2/100	T2/100						
	Wegner 1976					+	+	+	+	+	+			

HABITAT: Woodlots/Boisés

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Winter Wren	Askins & Philbrick 1987					T1/9	T1/9	T1/9						Troglodyte des forêts
Blue-gray Gnatcatcher	Blake & Karr 1984						T20	T20	T20					Gobe-moucherons gris-bleu
Eastern Bluebird	Wegner 1976					+	+	+	+	+	+			Merle-bleu de l'Est
Veery	Freemark 1984						T9/1.3							Grive fauve
	Blake & Karr 1984						T15	T15	T15					
	Askins & Philbrick 1987					T3/100	T3/100	T3/100						
	Wegner 1976					+	+	+	+	+	+			
Gray-cheeked Thrush	Wegner 1976					+	+	+	+	+	+			
Swainson's Thrush	Freemark 1984						T1/0.5							Grive à joues grises
	Wegner 1976					+	+	+	+	+	+			Grive à dos olive
Hermit Thrush	Wegner 1976					+	+	+	+	+	+			
Wood Thrush	Freemark 1984						T8/1.6							Grive solitaire
	Galli et al. 1976						C70	C70	C70					Grive des bois
	Blake & Karr 1984						T70	T70	T70					
	Askins & Philbrick 1987					T3/100	T3/100	T3/100						
	Wegner 1976					+	+	+	+	+	+			
American Robin	Freemark 1984						T16/1.3							Merle d'Amérique
	Galli et al. 1976						C90	C90	C90					
	Howe & Jones 1977						R78	R78						
	Askins & Philbrick 1987					T1/36	T1/36	T1/36						
	Wegner 1976					+	+	+	+	+	+			
Gray Catbird	Freemark 1984						T1/0.5							Moqueur chat
	Galli et al. 1976						C90	C90	C90					
	Howe & Jones 1977						N89	N89						
	Askins & Philbrick 1987					T2/100	T2/100	T2/100						
Brown Thrasher	Freemark 1984						T3/0.5							Moqueur roux
	Galli et al. 1976						C50	C50	C50					

HABITAT: Woodlots/Boisés

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Brown Thrasher	Howe & Jones 1977						N78	N78						
	Askins & Philbrick 1987					T1/36	T1/36	T1/36						Moqueur roux
Cedar Waxwing	Freemark 1984						T10/1.6							
	Wegner 1976					+	+	+	+	+	+			Jaseur des cèdres
Northern Shrike	Wegner 1976					+	+	+	+	+	+			
European Starling	Freemark 1984						T3/1.0							Pie-grièche grise
	McNeil et al. 1976					N	N	R	R	R	R			Etourneau sansonnet
	Galli et al. 1976						C90	C90	C90					
	Wegner 1976					+	+	+	+	+	+			
White-eyed Vireo	Blake & Karr 1984						T10	T10	T10					
	Askins & Philbrick 1987					T1/91	T1/91	T1/91						Viréo aux yeux blancs
Yellow-throated Vireo	Blake & Karr 1984						T10	T10	T10					
	Howe & Jones 1977						+11	+11						Viréo à gorge jaune
Warbling Vireo	Freemark 1984						T5/0.5							
Red-eyed Vireo	Freemark 1984						T15/2.6							Viréo mélodieux
	Galli et al. 1976						C60	C60	C60					Viréo aux yeux rouges
	Blake & Karr 1984						T85	T85	T85					
	Howe & Jones 1977						+11	+11						
	Askins & Philbrick 1987					T3/100	T3/100	T3/100						
	Wegner 1976					+	+	+	+	+	+			
Blue-winged Warbler	Galli et al. 1976						U30	U30	U30					
	Askins & Philbrick 1987					T1/71	T1/71	T1/71						Paruline à ailes bleues
Tennessee Warbler	Freemark 1984						T1/0.4							
Nashville Warbler	Freemark 1984						T2/0.8							Paruline obscure
	Wegner 1976					+	+	+	+	+	+			Paruline à joues grises
Northern Parula	Blake & Karr 1984						T10	T10	T10					
Yellow Warbler	Freemark 1984						T3/0.5							Paruline à collier
														Paruline jaune

HABITAT: Woodlots/Boisés

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Chestnut-sided Warbler	Freemark 1984						T4/0.8							Paruline à flancs marrons
	Askins & Philbrick 1987					T1/71	T1/71	T1/71						
Magnolia Warbler	Freemark 1984						T1/0.2							Paruline à tête cendrée
	Askins & Philbrick 1987					T1/9	T1/9	T1/9						
Myrtle Warbler	Wegner 1976					+	+	+	+	+	+			Paruline triste
Black-throated Green Warbler	Askins & Philbrick 1987					T2/36	T2/36	T2/36						Paruline verte à gorge noire
Yellow-throated Warbler	Blake & Karr 1984						T5	T5	T5					Paruline à gorge jaune
Pine Warbler	Freemark 1984						T2/0.4							Paruline des pins
Prairie Warbler	Askins & Philbrick 1987					T1/9	T1/9	T1/9						Paruline des prés
Blackpoll Warbler	Freemark 1984						T1/0.5							Paruline rayée
Cerulean Warbler	Blake & Karr 1984						T5	T5	T5					Paruline azurée
Black-and-white Warbler	Freemark 1984						T3/0.5							Paruline noir et blanc
	Galli et al. 1976						U30	U30	U30					
	Askins & Philbrick 1987					T3/100	T3/100	T3/100						
American Redstart	Freemark 1984						T1/0.3							Paruline flamboyante
	Askins & Philbrick 1987					T2/55	T2/55	T2/55						
Worm-eating Warbler	Askins & Philbrick 1987					T1/27	T1/27	T1/27						Paruline vermivore
Ovenbird	Freemark 1984						T9/2.0							Paruline couronnée
	Galli et al. 1976						C40	C40	C40					
	Blake & Karr 1984						T15	T15	T15					
	Askins & Philbrick 1987					T3/100	T3/100	T3/100						
Northern Waterthrush	Freemark 1984						T2/0.8							Paruline des ruisseaux
Louisiana Waterthrush	Askins & Philbrick 1987					T1/64	T1/64	T1/64						Paruline hochequeue
Kentucky Warbler	Blake & Karr 1984						T30	T30	T30					Paruline du Kentucky
Mourning Warbler	Freemark 1984						T6/0.5							Paruline triste
Common Yellowthroat	Freemark 1984						T8/1.5							Paruline masquée
	Howe & Jones 1977						+44	+44						

HABITAT: Woodlots/Boisés

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Common Yellowthroat	Askins & Philbrick 1987					T2/100	T2/100	T2/100						
Hooded Warbler	Askins & Philbrick 1987					T3/100	T3/100	T3/100						Paruline masquée
Canada Warbler	Freemark 1984						T1/0.6							Paruline à capuchon
	Askins & Philbrick 1987					T2/45	T2/45	T2/45						Paruline du Canada
Yellow-breasted Chat	Bla[illegible] & Karr 1984						T15	T15	T15					
Scarlet Tanager	Freemark 1984						T5/1.0							Paruline polyglotte
	Galli et al. 1976						U30	U30	U30					Tangara écarlate
	Blake & Karr 1984						T50	T50	T50					
	Askins & Philbrick 1987					T2/100	T2/100	T2/100						
	Wegner 1976					+	+	+	+	+	+			
Northern Cardinal	Galli et al. 1976						C70	C70	C70					
	Howe & Jones 1977						+33	+33						Cardinal rouge
	Askins & Philbrick 1987					T2/64	T2/64	T2/64						
Rose-breasted Grosbeak	Freemark 1984						T15/2.8							
	Galli et al. 1976						U40	U40	U40					Cardinal à poitrine rose
	Blake & Karr 1984						T20	T20	T20					
	Howe & Jones 1977						N78	N78						
	Askins & Philbrick 1987					T1/18	T1/18	T1/18						
	Wegner 1976					+	+	+	+	+	+			
Indigo Bunting	Freemark 1984						T6/1.0							
	Ashton & Jackson 1983					T	T							Passerin indigo
	Galli et al. 1976						C70	C70	C70					
	Blake & Karr 1984						T100	T100	T100					
	Howe & Jones 1977						T78	T78						
	Askins & Philbrick 1987					T1/9	T1/9	T1/9						
Rufous-sided Towhee	Galli et al. 1976						C90	C90	C90					
	Askins & Philbrick 1987					T3/100	T3/100	T3/100						Tohi à flancs roux

HABITAT: Woodlots/Boisés

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Francais commun
Chipping Sparrow	Freemark 1984						T8/0.8							Bruant familier
	Howe & Jones 1977						+11	+11						
	Askins & Philbrick 1987					T1/9	T1/9	T1/9						
Savannah Sparrow	Wegner 1976					+	+	+	+	+	+			Bruant des prés
Song Sparrow	Freemark 1984						T16/2.3							Bruant chanteur
	Galli et al. 1976						U40	U40	U40					
	Howe & Jones 1977						T67	T67						
	Askins & Philbrick 1987					T1/9	T1/9	T1/9						
	Wegner 1976					+	+	+	+	+	+			
White-throated Sparrow	Freemark 1984						T7/1.3							Bruant à gorge blanche
	Wegner 1976					+	+	+	+	+	+			
Dark-eyed Junco	Wegner 1976					+	+	+	+	+	+			Junco ardoisé
Bobolink	Freemark 1984						T5/0.8							Goglu
	Wegner 1976					+	+	+	+	+	+			
Red-winged Blackbird	Freemark 1984						T15/1.5							Carouge à épaulettes
	Johnson & Caslick 1982							RL1	RL1	RL3	FL2	F3		
	McNeil et al. 1976		+	+	+			R	R	R	R			
	Galli et al. 1976						U30	U30	U30					
	Askins & Philbrick 1987					T1/45	T1/45	T1/45						
	Wegner 1976					+	+	+	+	+	+			
Eastern Meadowlark	Wegner 1976					+	+	+	+	+	+			Sturnelle des prés
Rusty Blackbird	Wegner 1976					+	+	+	+	+	+			Quiscale rouilleux
Common Grackle	Freemark 1984						T15/1.5							Quiscale bronzé
	Galli et al. 1976						C90	C90	C90					
	Askins & Philbrick 1987					T1/9	T1/9	T1/9						
Brown-headed Cowbird	Freemark 1984						T16/1.8							Vacher à tête brune
	McNeil et al. 1976					N	N	R	R	R	R			

HABITAT: Woodlots/Boisés

English Common Name	Citation	Jan jan	Feb fév	Mar mars	Apr avr	May mai	Jun juin	Jul juil	Aug août	Sept sept	Oct oct	Nov nov	Dec déc	Nom Français commun
Brown-headed Cowbird	Askins & Philbrick 1987					T2/45	T2/45	T2/45						Vacher à tête brune
	Wegner 1976					+	+	+	+	+	+			
Northern Oriole	Freemark 1984						T14/1.0							Oriole du Nord
	Galli et al. 1976						U60	U60	U60					
	Blake & Karr 1984						T15	T15	T15					
	Howe & Jones 1977						N78	N78						
	Askins & Philbrick 1987					T1/45	T1/45	T1/45						
	Wegner 1976					+	+	+	+	+	+			
Purple Finch	Freemark 1984						T2/0.4							
Common Redpoll	McNeil et al. 1976	+	+	+	+							+	+	Roselin pourpré
American Goldfinch	Freemark 1984						T15/1.6							Sizerin flammé
	Wegner 1976					+	+	+	+	+	+			Chardonneret jaune
Evening Grosbeak	McNeil et al. 1976	+	+	+								+	+	
	Wegner 1976					+	+	+	+	+	+			Gros-bec errant
House Sparrow	Freemark 1984						T2/0.4							Moineau domestique
Present, Season Not Specified														Présent, Saison Non Précisée
Red-tailed Hawk	McNeil et al. 1976													Buse à queue rousse
Mourning Dove	McNeil et al. 1976													Tourterelle triste
American Goldfinch	McNeil et al. 1976													Chardonneret jaune

HABITAT: Woodlots/Boisés

F = Feeding/S'alimentant N = Nesting/Nichant + = Present, Activity Not Specified/Présent, activité non précisée

T = Territorial or singing male/Mâle territorial ou chantant L = Loafing/Flânant P = Perching/Perchant R = Roosting/Se reposant

Askins & Philbrick 1987	#a/#b
	
	#a)
	1 = < 5, 2 = 5 - 10, and 3 = > 10 highest number of territorial males recorded
	
	#b)
	percentage of censuses in which species detected (total = 11)

Blake & Karr 1984	# = percentage of breeding bird surveys during which the species was detected (total 20, one in each of ten woodlots in 1979 and 1980). 'Summer' = June, July and August
Freemark 1984	#1/#2 #1 = number of woodlots in which the bird was sighted (total = 16) #2 = highest number of sightings/30min/ha
Galli et al. 1976	C = common U = uncommon # = percentage of woodlot size classes with at least one record of the species (total 10)
Howe & Jones 1977 Johnson and Caslick 1982	# = % of sites on which species was observed during at least one census 1 = <30%, 2 = 30-60%, and 3 = >60% utilization
McNeil et al. 1976	1 = <30%, 2 = 30-60% et 3 = >60% utilisation

APPENDIX 4 / ANNEXE 4

Bird species reported in the Mixed-Wood Plain database listed by English/French common name, scientific name, foraging guild(s) (DeGraff *et al.* 1985), and number of database records.

Espèces d'oiseaux enregistrées dans le corpus des données réunies sur l'écozone des plaines de forêts mixtes, présentées selon les noms vernaculaires anglais et français, le nom scientifique, le régime alimentaire (DeGraff *et al.* 1985), et le nombre d'enregistrements dans le corpus.

Foraging Guild Definitions (From DeGraaf *et al.* 1985)

Food - Based on major food items (20% of diet during a given period.

- Carnivore (CA): vertebrates
- Crustaceovore (CR): crustaceans
- Frugivore (FR): fruits
- Granivore (GR): nuts
- Herbivore (HE): plants (leaves, stems, roots)
- Insectivore (IN): insects
- Molluscovore (MO): mollusks
- Omnivore (OM): a variety of foods including both animal and plant foods (the less common food group makes up 10% of diet)
- Piscivore (PI): fish
- Vermivore (VE): sandworms, earthworms, etc.

Substrate - The place where a food item is found or taken

- air (AIR): caught in the air
- bark (BARK): on, in, or under bark of trees
- floral (FLOR): on or in flowers
- freshwater shoreline (FRSH): shores of freshwater ponds, lakes, rivers, or streams
- freshwater surface (FRSU): surface of freshwater habitats
- ground (GROU): on the ground or on very low, weedy vegetation
- lower canopy/shrub (LOCA): on leaves, twigs, and branches of shrubs saplings, and lower crowns of trees
- shoreline (SHOR): along shoreline of freshwater and saltwater (coastal) habitats
- upper canopy (UPCA): on leaves, twigs and branches of trees in main canopy
- water (WATE): brackish, fresh- and saltwater habitats

Définitions des régimes alimentaires selon DeGraaf *et al.*, 1985

Nourriture - selon ses principaux constituants (20 % de la nourriture ingérée au cours d'une période donnée).

- Carnivore (CA) : chair des vertébrés;
- Carcinophage (CR) : crustacés;
- Frugivore (FR) : fruits;
- Granivore (GR) : graines
- Herbivore (HE) : herbe (feuilles, tiges, racines);
- Insectivore (IN) : insectes;
- Malacophage (MA) : mollusques;
- Omnivore (OM) : aliments aussi bien végétaux qu'animaux (le groupe d'aliments le plus fréquent constituant jusqu'à 10% du régime);
- Piscivore (PI) : poissons;
- Helminthophage (HL) : vers de terre, des sables, etc.

Milieu - où la nourriture est trouvée ou capturée.

- air (AIR) : capture dans l'air;
- écorce (ÉCOR) : sur, dans ou sous l'écorce;
- fleurs (FLEU) : sur ou dans les fleurs;
- rives (RIVE) : des eaux douces (étangs, lacs ou cours d'eau);
- surface de l'eau (SURF) : surface des étendues d'eau douce;
- sol (SOL) : le sol ou la végétation très basse, ligneuse;
- strate inférieure ou arbustive (STIN) : feuilles, rameaux et branches des arbrisseaux ainsi que les gaules et le bas du houppier des arbres;
- rivage (RIVA) : des eaux douces et salées (littoral océanique);
- strate supérieure (STSU): feuilles, rameaux et branches de l'étage dominant;
- eau (EAU) : les eaux saumâtres, douces et salées;

Technique- The manner in which food is obtained. Some techniques are associated with particular food types and/or substrates.

- ambusher (AMBU): slowly stalks or waits for prey to come within reach
- dabbler (DABB): submerges head and neck or tips up (various water substrates)
- excavator (EXCA): locates food in bark by drilling holes
- diver (DIVE): dives from surface for underwater food
- foot plunger (FOPL): catches prey by plunging from air to water surface (or ground) and seizing prey in talons
- forager (FORA): takes almost any food items encountered upon the substrate (includes all herbivores and omnivores feeding on terrestrial habitats or vegetation, except grazers and grubbers)
- gleaner (GLEA): selects particular food items from the substrate
- grazer (GRAZ): feeds on grasses, sedges or grains in fields or meadows
- grubber (GRUB): digs up roots and tubers of either terrestrial or aquatic plants
- hawker (HAWK): flies after prey and captures it either in air or on ground
- hover-gleaner (HOGL): hovers in air while selecting prey (from vegetation or ground)
- plunger (HOGL): dives from air into water to capture prey in bill or gular pouch
- sallier (SALL): perches on exposed branch or twig, waits for insect to fly by, and then pursues and catches insect in air
- scavenger (SCAV): takes a variety of items, including refuse or carrion
- screener (SCRE): flies with bill open and screens prey from air
- strainer (STRA): strains food items from water or mud through lamellae along edge of bill

Technique - moyen par lequel la nourriture est capturée. Correspond parfois à des types donnés d'aliments, à des milieux particuliers ou aux deux.

- chasse à l'affût (CHAF) : se promène lentement ou attend que la proie passe à sa portée;
- barbote (BARB) : s'enfonce la tête et le cou dans l'eau ou bascule son corps (divers milieux aquatiques);
- creuse (CREU) : trouve sa nourriture dans l'écorce en creusant cette dernière;
- plonge (PLON) : plonge de la surface de l'eau pour saisir la nourriture sous l'eau;
- rafle (RAFL) : capture sa proie en plongeant du haut des airs jusqu'à la surface de l'eau (ou du sol) et saisit la proie entre ses serres;
- éclectique (ÉCLE) : prend presque tous les aliments qu'il rencontre. (cas de tous les herbivores et de tous les omnivores qui se nourrissent dans les habitats terrestres ou dans la végétation, sauf ceux qui pâturent et ceux qui fouissent);
- grapille (GRAP) : choisit ses aliments;
- pâture (PÂTU) : se nourrit d'herbe, de carex ou de graines dans les champs ou sur les pelouses;
- fouit (FOUI) : creuse le sol à la recherche des racines et des tubercules des plantes terrestres ou aquatiques;
- poursuit sa proie (POUR) : et la capture soit dans les airs ou sur le sol;
- (fait du) sur place (SURP) : vole sur place dans l'air en choisissant sa proie (dans la végétation ou sur le sol);
- pique (PIQU) : plonge du haut des airs dans l'eau pour capturer la proie dans son bec ou dans son sac gulaire;
- chasse au perché (PERC) : perche sur une branche ou un rameau exposé et attend le passage d'un insecte pour le poursuivre et l'attraper au vol;
- détritivore (DÉTR) : consomme divers aliments, y compris des déchets ou de la charogne;
- chasse en vol (CVOL) : vole le bec ouvert pour capturer ses proies;
- filtre (FILT) : filtre les aliments de l'eau ou de la boue par les lamelles bordant son bec;

Scientific Name/ Nom Scientifique	English Name/ Nom Anglaise	French Name/ Nom Française	Foraging Guilds/Régime alimentaire			
			Food/ Nourriture	Substrate/ Milieu	Technique/ Technique	# Records/ # Enregistrements
Ardea herodias	Great Blue Heron	Grand Heron	PI/PI		AMBU/CHAF	3
Chen caerulescens	Snow Goose	Oie des neiges	HE/HE		GRAZ/PATU	1
Branta canadensis	Canada Goose	Bernache du Canada	HE/HE		GRAZ,DABB/ PATU,BARB	25
Aix sponsa	Wood Duck	Canard branchu	GR/GR		GLEA/GRAP	3
Anas crecca	Green-winged Teal	Sarcelle a ailes vertes	GR/GR		DABB/BARB	4
Anas rubripes	American Black Duck	Canard noir	OM/OM		DABB/BARB	1
Anas platyrhynchos	Mallard	Canard colvert	GR/GR		GLEA,DABB/ GRAP,BARB	6
Anas acuta	Northern Pintail	Canard pilet	GR/GR		DABB/BARB	3
Anas discors	Blue-winged Teal	Sarcelle a ailes bleues	OM/OM		DABB/BARB	4
Anas clypeata	Northern Shoveler	Canard souchet	OM/OM		STRA/FILT	1
Aythya collaris	Ring-necked Duck	Morillon a collier	OM/OM		FORA/ECLE	1
Melanitta nigra	Black Scoter	Macreuse a bec jaune	OM/OM		FORA/ECLE	1
Bucephala albeola	Bufflehead	Petit Garrot	IN/IN		GLEA/GRAP	1
Lophodytes cucullatus	Hooded Merganser	Bec-scie couronne	PI,IN,CR/ PI,IN,CR		DIVE,GLEA/ PLON,GRAP	1
Mergus serrator	Red-breasted Merganser	Bec-scie a poitrine rousse	PI/PI		DIVE/PLON	1
Cathartes aura	Turkey Vulture	Urubu a tete rouge	CA/CA		SCAV/DETR	6
Pandion haliaetus	Osprey	Balbuzard	PI/PI		FOPL/RAFL	1
Circus cyaneus	Northern Harrier	Busard Saint-Martin	CA/CA		HAWK/POUR	10
Accipiter cooperii	Cooper's Hawk	Epervier de Cooper	CA/CA		HAWK/POUR	3
Accipiter gentilis	Northern Goshawk	Autour des palombes	CA/CA		HAWK/POUR	2
Buteo lineatus	Red-shouldered Hawk	Buse a epaulettes	CA/CA		HAWK/POUR	3
Buteo platypterus	Broad-winged Hawk	Petite Buse	CA/CA		HAWK/POUR	1
Buteo jamaicensis	Red-tailed Hawk	Buse a queue rousse	CA/CA		HAWK/POUR	13
Buteo lagopus	Rough-legged Hawk	Buse pattue	CA/CA		HAWK/POUR	4
Falco sparverius	American Kestrel	Crecerelle d'Amerique	IN,CA/IN,CA		HAWK/POUR	13
Falco columbarius	Merlin	Faucon emerillon	CA/CA		HAWK/POUR	2
Perdix perdix	Gray Partridge	Perdrix grise	OM/OM		FORA/ECLE	1
Phasianus colchicus	Ring-necked Pheasant	Faisan de chasse	OM/OM		FORA/ECLE	17
Bonasa umbellus	Ruffed Grouse	Gelinotte huppee	OM/OM		FORA/ECLE	2
Colinus virginianus	Northern Bobwhite	Colin de Virginie	OM/OM		FORA/ECLE	14
Pluvialis squatarola	Black-bellied Plover	Pluvier argente	CR,IN,VE/ CR,IN,HL		GLEA/GRAP	5
Pluvialis dominica	Lesser Golden-Plover	Pluvier dore d'Amerique	IN/IN		GLEA/GRAP	6
Charadrius vociferus	Killdeer	Pluvier kildir	IN/IN		GLEA/GRAP	29
Tringa melanoleuca	Greater Yellowlegs	Grand Chevalier	PI,IN/PI,IN		AMBU,GLEA/ CHAF,GRAP	1

Scientific Name/ Nom Scientifique	English Name/ Nom Anglaise	French Name/ Nom Française	Foraging Guilds/Régime alimentaire			
			Food/ Nourriture	Substrate/ Milieu	Technique/ Technique	# Records/ # Enregistrements
Tringa flavipes	Lesser Yellowlegs	Petit Chevalier	IN,CR/IN,CR		GLEA/GRAP	1
Actitis macularia	Spotted Sandpiper	Chevalier branlequeue	IN/IN		GLEA/GRAP	2
Bartramia longicauda	Upland Sandpiper	Maubeche des champs	IN/IN		GLEA/GRAP	13
Scolopax minor	American Woodcock	Becasse d'Amerique	VE/HL		PROB/PROB	1
Larus delawarensis	Ring-billed Gull	Goeland a bec cercle	IN,CA/IN,CR	GROU/SOL	GLEA,HAWK/ GRAP,POUR	11
Larus argentatus	Herring Gull	Goeland argente	OM/OM	SHOR/RIVA	SCAV/DETR	5
Chlidonias niger	Black Tern	Guifette noire	IN/IN	FRSU,AIR/ SURF,AIR	GLEA,HAWK/ GRAP,POUR	1
Columba livia	Rock Dove	Pigeon biset	OM/OM	GROU/SOL	FORA/ECLE	14
Zenaida macroura	Mourning Dove	Tourterelle triste	GR/GR	GROU/SOL	GLEA/GRAP	39
Coccyzus erythropthalmus	Black-billed Cuckoo	Coulicou a bec noir	IN/IN	LOCA/STIN	GLEA/GRAP	3
Coccyzus americanus	Yellow-billed Cuckoo	Coulicou a bec jaune	IN/IN	LOCA/STIN	GLEA/GRAP	4
Tyto alba	Common Barn-Owl	Effraie de clochers	CA/CA	GROU/SOL	HAWK/POUR	1
Otus asio	Eastern Screech-Owl	Petit-duc macule	IN,CA/IN,CA	GROU/SOL	HAWK/POUR	1
Bubo virginianus	Great Horned Owl	Grand-duc d'Amerique	CA/CA	GROU/SOL	HAWK/POUR	2
Strix varia	Barred Owl	Chouette rayee	CA/CA	GROU/SOL	HAWK/POUR	1
Asio flammeus	Short-eared Owl	Hibou des marais	CA/CA	GROU/SOL	HAWK/POUR	1
Chordeiles minor	Common Nighthawk	Engoulevent d'Amerique	IN/IN	AIR/AIR	SCRE/CVOL	2
Caprimulgus vociferus	Whip-poor-will	Engoulevent bois-pourri	IN/IN	AIR/AIR	SCRE/CVOL	1
Chaetura pelagica	Chimney Swift	Martinet ramoneur	IN/IN	AIR/AIR	SCRE/CVOL	10
Archilochus colubris	Ruby-throated Hummingbird	Colibri a gorge rubis	OM/OM	FLOR/FLEU	HOGL/SURP	5
Ceryle alcyon	Belted Kingfisher	Martin-pecheur d'Amerique	PI/PI	WATE/EAU	PLUN/PLUN	1
Melanerpes erythrocephalus	Red-headed Woodpecker	Pic a tete rouge	IN/IN	AIR,BARK/ AIR,ECOR	SALL,GLEA/ PERC,GRAP	12
Melanerpes carolinus	Red-bellied Woodpecker	Pic a ventre roux	IN,OM/IN,OM	BARK,GROU/ ECOR,SOL	GLEA,FORA/ GRAP,ECLE	6
Sphyrapicus varius	Yellow-bellied Sapsucker	Pic macule	OM/OM	BARK/ECOR	EXCA/CREU	2
Picoides pubescens	Downy Woodpecker	Pic mineur	IN,FR/IN,FR	BARK,LOCA/ ECOR,STIN	GLEA/GRAP	14
Picoides villosus	Hairy Woodpecker	Pic chevelu	IN,FR/IN,FR	BARK,LOCA/ ECOR,STIN	GLEA/GRAP	10
Colaptes auratus	Northern Flicker	Pic flamboyant	IN/IN	GROU/SOL	GLEA/GRAP	26
Dryocopus pileatus	Pileated Woodpecker	Grand Pic	IN/IN	BARK/ECOR	EXCA/CREU	3
Contopus virens	Eastern Wood-Pewee	Pioui de l'Est	IN/IN	AIR/AIR	SALL/PERC	9
Empidonax virescens	Acadian Flycatcher	Moucherille vert	IN/IN	AIR/AIR	SALL/PERC	2
Empidonax minimus	Least Flycatcher	Moucherolle tchebec	IN/IN	AIR/AIR	SALL/PERC	4

Scientific Name/ Nom Scientifique	English Name/ Nom Anglaise	French Name/ Nom Française	Foraging Guilds/Régime alimentaire: Food/ Nourriture	Substrate/ Milieu	Technique/ Technique	# Records/ # Enregistrements
Sayornis phoebe	Eastern Phoebe	Moucherolle phebi				7
Myiarchus crinitus	Great Crested Flycatcher	Tyran huppe	IN/IN	AIR/AIR	SALL/PERC	8
Tyrannus tyrannus	Eastern Kingbird	Tyran tritri	IN/IN	AIR/AIR	SALL/PERC	20
Ermophila alpestris	Horned Lark	Alouette cornue	OM/OM	GROU/SOL	GLEA/GRAP	22
Progne subis	Purple Martin	Hirondelle noire	IN/IN	AIR/AIR	SCRE/CVOL	11
Tachycineta bicolor	Tree Swallow	Hirondelle bicolore	IN/IN	AIR/AIR	SCRE/CVOL	6
Stelgidopteryx serripennis	Northern Rough-winged Swallow	Hirondelle a ailes herissees	IN/IN	AIR/AIR	SCRE/CVOL	2
Riparia riparia	Bank Swallow	Hirondelle de rivage	IN/IN	AIR/AIR	SCRE/CVOL	2
Hirundo pyrrhonota	Cliff Swallow	Hirondelle a front blanc	IN/IN	AIR/AIR	SCRE/CVOL	2
Hirundo rustica	Barn Swallow	Hirondelle des granges	IN/IN	AIR/AIR	SCRE/CVOL	18
Cyanocitta cristata	Blue Jay	Geai bleu	OM/OM	GROU,UPCA/ SOL,STSU	FORA/ECLE	22
Corvus brachyrhynchos	American Crow	Corneille d'Amerique	OM/OM	GROU/SOL	FORA/ECLE	38
Parus atricapillus	Black-capped Chickadee	Mesange a tete noire	IN/IN	LOCA/STIN	GLEA/GRAP	9
Parus bicolor	Eastern Tufted Titmouse	Mésange bicolore	IN/IN	LOCA/STIN	GLEA/GRAP	3
Sitta canadensis	Red-breasted Nuthatch	Sittelle a poitrine rousse	IN/IN	BARK/ECOR	GLEA/GRAP	4
Sitta carolinensis	White-breasted Nuthatch	Sittelle a poitrine blanche	IN/IN	BARK/ECOR	GLEA/GRAP	11
Certhia americana	Brown Creeper	Grimpereau brun	IN/IN	BARK/ECOR	GLEA/GRAP	7
Thryothorus ludovicianus	Carolina Wren	Troglodyte de Caroline	IN/IN	LOCA/STIN	GLEA/GRAP	2
Troglodytes aedon	House Wren	Troglodyte familier	IN/IN	LOCA/STIN	GLEA/GRAP	6
Troglodytes troglodytes	Winter Wren	Troglodyte des forets	IN/IN	GROU/SOL	GLEA/GRAP	1
Cistothorus platensis	Sedge Wren	Troglodyte a bec court	IN/IN	GROU/SOL	GLEA/GRAP	1
Regulus satrapa	Golden-crowned Kinglet	Roitelet a couronne doree	IN/IN	LOCA/STIN	GLEA/GRAP	1
Regulus calendula	Ruby-crowned Kinglet	Roitelet a couronne rubis	IN/IN	LOCA/STIN	GLEA/GRAP	1
Polioptila caerulea	Blue-gray Gnatcatcher	Gobe-moucherons gris-bleu	IN/IN	UPCA/STSU	GLEA/GRAP	1
Sialia sialis	Eastern Bluebird	Merle-bleu de l'Est	IN,FR/IN,FR	GROU,LOCA/ SOL,STIN	GLEA/GRAP	14
Catharus fuscescens	Veery	Grive fauve	OM/OM	GROU,LOCA/ SOL,STIN	FORA/ECLE	5
Catharus minimus	Gray-cheeked Thrush	Grive a joues grises	OM/OM	GROU,LOCA/ SOL,STIN	FORA/ECLE	3
Catharus ustulatus	Swainson's Thrush	Grive a dos olive	OM/OM	GROU,LOCA/ SOL,STIN	FORA/ECLE	5
Catharus guttatus	Hermit Thrush	Grive solitaire	IN/IN	GROU/SOL	GLEA/GRAP	3
Hylocichla mustelina	Wood Thrush	Grive des bois	OM/OM	GROU/SOL	FORA/ECLE	7

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Turdus migratorius	American Robin	Merle d'Amerique	OM,VE/OM,HL	LOCA,GROU/ SOL,STIN	FORA,GLEA/ ECLE,GRAP	56
Dumetella carolinensis	Gray Catbird	Moqueur chat	OM/OM	GROU,LOCA/ SOL,STIN	FORA/ECLE	15
Mimus polyglottos	Northern Mockingbird	Moqueur polyglotte	OM/OM	GROU/SOL	FORA/ECLE	8
Toxostoma rufum	Brown Thrasher	Moqueur roux	OM/OM	GROU,LOCA/ SOL,STIN	FORA/ECLE	24
Anthus spinoletta	Water Pipit	Pipit spioncelle	IN/IN	GROU/SOL	GLEA/GRAP	8
Bombycilla cedrorum	Cedar Waxwing	Jaseur des cedres	IN,FR/IN,FR	AIR,UPCA/ AIR,STSU	SALL,GLEA/ PERC,GRAP	15
Lanius excubitor	Northern Shrike	Pie-grieche grise	CA/CA	GROU/SOL	HAWK/POUR	2
Lanius ludovicianus	Loggerhead Shrike	Pie-grieche migratrice	CA/CA	GROU/SOL	HAWK/POUR	5
Sturnus vulgaris	European Starling	Etourneau sansonnet	OM/OM	GROU/SOL	FORA/ECLE	73
Vireo griseus	White-eyed Vireo	Vireo aux yeux blancs	IN/IN	LOCA/STIN	GLEA/GRAP	2
Vireo flavifrons	Yellow-throated Vireo	Vireo a gorge jaune	IN/IN	UPCA/STSU	GLEA/GRAP	2
Vireo gilvus	Warbling Vireo	Vireo melodieux	IN/IN	UPCA/STSU	GLEA/GRAP	2
Vireo olivaceus	Red-eyed Vireo	Vireo aux yeux rouges	IN/IN	UPCA/STSU	GLEA/GRAP	7
Vermivora pinus	Blue-winged Warbler	Paruline a ailes bleues	IN/IN	LOCA/STIN	GLEA/GRAP	2
Vermivora peregrina	Tennessee Warbler	Paruline obscure	IN/IN	UPCA/STSU	GLEA/GRAP	1
Vermivora ruficapilla	Nashville Warbler	Paruline a joues grises	IN/IN	LOCA/STIN	GLEA/GRAP	5
Parula americana	Northern Parula	Paruline a collier	IN/IN	UPCA/STSU	GLEA/GRAP	1
Dendroica petechia	Yellow Warbler	Paruline jaune	IN/IN	LOCA/STIN	GLEA/GRAP	3
Dendroica pensylvanica	Chestnut-sided Warbler	Paruline a flancs marron	IN/IN	LOCA/STIN	GLEA/GRAP	2
Dendroica magnolia	Magnolia Warbler	Paruline a tete cendree	IN/IN	LOCA/STIN	GLEA/GRAP	2
Dendroica coronata	Yellow-rumped (Myrtle) Warbler	Paruline a croupion jaune	IN/IN	LOCA/STIN	GLEA/GRAP	4
Dendroica virens	Black-throated Green Warbler	Paruline verte a gorge noire	IN/IN	UPCA/STSU	GLEA/GRAP	1
Dendroica dominica	Yellow-throated Warbler	Paruline a gorge jaune	IN/IN	UPCA,BARK/ STSU,ECOR	GLEA/GRAP	1
Dendroica pinus	Pine Warbler	Paruline des pins	IN/IN	BARK/ECOR	GLEA/GRAP	1
Dendroica discolor	Prairie Warbler	Paruline des pres	IN/IN	LOCA/STIN	GLEA/GRAP	1
Dendroica palmarum	Palm Warbler	Paruline a couronne rousse	IN/IN	GROU/SOL	GLEA/GRAP	2
Dendroica striata	Blackpoll Warbler	Paruline rayee	IN/IN	UPCA/STSU	GLEA/GRAP	1
Dendroica cerulea	Cerulean Warbler	Paruline azuree	IN/IN	UPCA/STSU	GLEA/GRAP	1
Mniotilta varia	Black-and-white Warbler	Paruline noir et blanc	IN/IN	BARK/ECOR	GLEA/GRAP	3
Setophaga ruticilla	American Redstart	Paruline flamboyante	IN/IN	LOCA,AIR/ STIN,AIR	GLEA,SALL/ GRAP,PERC	2
Helmitheros vermivorus	Worm-eating Warbler	Paruline vermivore	IN/IN	GROU/SOL	GLEA/GRAP	1

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Seiurus aurocapillus	Ovenbird	Paruline couronnee	MO,IN/MA,IN	GROU/SOL	GLEA/GRAP	4
Seiurus noveboracensis	Northern Waterthrush	Paruline des ruisseaux	IN/IN	FRSH/RIVE	GLEA/GRAP	1
Seiurus motacilla	Louisiana Waterthrush	Paruline hochequeue	IN/IN	FRSH/RIVE	GLEA/GRAP	1
Oporornis formosus	Kentucky Warbler	Paruline du Kentucky	IN/IN	GROU/SOL	GLEA/GRAP	1
Oporornis philadelphia	Mourning Warbler	Paruline triste	IN/IN	GROU/SOL	GLEA/GRAP	2
Geothlypis trichas	Common Yellowthroat	Paruline masquee	IN/IN	LOCA/STIN	GLEA/GRAP	10
Wilsonia citrina	Hooded Warbler	Paruline a capuchon	IN/IN	LOCA,AIR/ STIN,AIR	GLEA,SALL/ PERC,GRAP	1
Wilsonia pusilla	Wilson's Warbler	Paruline a calotte noire	IN/IN	LOCA,AIR/ STIN,AIR	GLEA,SALL/ PERC,GRAP	1
Wilsonia canadensis	Canada Warbler	Paruline du Canada	IN/IN	LOCA/STIN	GLEA/GRAP	2
Icteria virens	Yellow-breasted Chat	Paruline polyglotte	OM/OM	LOCA/STIN	FORA/ECLE	1
Piranga rubra	Summer Tanager	Tangara vermillon	IN/IN	UPCA/STSU	GLEA/GRAP	1
Piranga olivacea	Scarlet Tanager	Tangara ecarlate	IN/IN	UPCA/STSU	GLEA/GRAP	8
Cardinalis cardinalis	Northern Cardinal	Cardinal rouge	OM/OM	GROU/SOL	FORA/ECLE	19
Pheucticus ludovicianus	Rose-breasted Grosbeak	Cardinal a poitrine rose	OM/OM	UPCA/STSU	FORA/ECLE	12
Passerina cyanea	Indigo Bunting	Passerin indigo	OM/OM	LOCA/STIN	FORA/ECLE	20
Pipilo erythrophthalmus	Rufous-sided Towhee	Tohi a flancs roux	OM/OM	GROU/SOL	FORA/ECLE	5
Spizella arborea	American Tree Sparrow	Bruant hudsonien	OM/OM	GROU/SOL	FORA/ECLE	11
Spizella passerina	Chipping Sparrow	Bruant familier	OM/OM	GROU/SOL	FORA/ECLE	11
Spizella pusilla	Field Sparrow	Bruant des champs	OM/OM	GROU/SOL	FORA/ECLE	13
Pooecetes gramineus	Vesper Sparrow	Bruant vesperal	OM/OM	GROU/SOL	FORA/ECLE	18
Passerculus sandwichensis	Savannah Sparrow	Bruant des pres	OM/OM	GROU/SOL	FORA/ECLE	15
Ammodramus savannarum	Grasshopper Sparrow	Bruant sauterelle	OM/OM	GROU/SOL	FORA/ECLE	11
Ammodramus henslowii	Henslow's Sparrow	Bruant de Henslow	OM/OM	GROU/SOL	FORA/ECLE	1
Melospiza melodia	Song Sparrow	Bruant chanteur	OM/OM	LOCA,GROU/ STIN,SOL	FORA/ECLE	29
Melospiza georgiana	Swamp Sparrow	Bruant des marais	OM/OM	GROU/SOL	FORA/ECLE	3
Zonotrichia albicollis	White-throated Sparrow	Bruant a gorge blanche	OM/OM	GROU/SOL	FORA/ECLE	9
Junco hyemalis	Dark-eyed Junco	Junco ardoise	OM/OM	GROU/SOL	FORA/ECLE	13
Calcarius lapponicus	Lapland Longspur	Bruant lapon	OM/OM	GROU/SOL	FORA/ECLE	3
Plectrophenax nivalis	Snow Bunting	Bruant des neiges	OM/OM	GROU/SOL	FORA/ECLE	5
Dolichonyx oryzivorus	Bobolink	Goglu	OM/OM	GROU/SOL	FORA/ECLE	19
Agelaius phoeniceus	Red-winged Blackbird	Carouge a epaulettes	OM/OM	GROU/SOL	FORA/ECLE	70
Sturnella magna	Eastern Meadowlark	Sturnelle des pres	IN/IN	GROU/SOL	GLEA/GRAP	33
Sturnella neglecta	Western Meadowlark	Sturnelle de l'Ouest	IN/IN	GROU/SOL	GLEA/GRAP	4

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Euphagus carolinus	Rusty Blackbird	Quiscale rouilleux	IN/IN	GROU/SOL	GLEA/GRAP	3
Quiscalus quiscula	Common Grackle	Quiscale bronze	OM/OM	GROU/SOL	FORA/ECLE	52
Molothrus ater	Brown-headed Cowbird	Vacher a tete brune	OM/OM	GROU/SOL	FORA/ECLE	40
Icterus galbula	Northern Oriole	Oriole du Nord	OM/OM	UPCA/STSU	FORA/ECLE	20
Carpodacus purpureus	Purple Finch	Roselin pourpre	GR,FR/GR,FR	UPCA/STSU	GLEA/GRAP	1
Carduelis flammea	Common Redpoll	Sizerin flamme	OM/OM	GROU,LOCA/ SOL,STIN	FORA/ECLE	5
Carduelis tristis	American Goldfinch	Chardonneret jaune	OM/OM	LOCA,GROU/ SOL,STIN	FORA/ECLE	32
Coccothraustes vespertinus	Evening Grosbeak	Gros-bec errant	OM/OM	UPCA/STSU	FORA/ECLE	6
Passer domesticus	House Sparrow	Moineau domestique	GR/GR	GROU/SOL	GLEA/GRAP	25